EDITORIAL INDEX—PAGE 31

COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS

AUGUST 1947

"GOOD!" . . . and that goes for Reo, too

Ice cream is the popular American dessert *because it's good!* Reo equipment is popular in this industry, and all others confronted with sustained, top-heavy seasonal demands, *because it's good!* Good engineering, good materials and construction are the backbone of Reo stamina, dependability, economy and long life. Massive, cold-riveted frames and heavy-duty dimensions in every chassis part take care of heavy loads, day in, day out. The rugged engines are precision-built to put in *extra hours.* Reo's exclusive More-Load design gives more load space per inch of wheelbase, shorter turning radius, greater maneuverability. It speeds deliveries, saves driver's time and energy in narrow streets and congested areas. Get the facts—you'll *standardize on Reo.* REO MOTORS, INC., Lansing 20, Mich.

STANDARDIZE ON REO

1904 • AMERICA'S TOUGHEST TRUCK • 1947

READ WHY A TRUCK LIKE THIS

CAN SAVE YOU MONEY!

This truck—like every Dodge "*Job-Rated*" truck—is built to fit a specific hauling job.

It's powered with exactly the right one of 7 engines—plus the right gear ratio—to provide the pulling power the job requires, with maximum economy.

It's built with exactly the right clutch, transmission, rear axle—the right units throughout . . . for "top" performance, longer life, and maximum economy . . . on the job for which it was built.

It stands to reason that a truck "*Job-Rated*" to haul *your* loads over *your* roads —will save YOU money!

You can get a truck to fit *your* job—a truck to give better performance, better service to your customers, and to save you money!

Simply explain your hauling problems in detail to your Dodge dealer. He has the engineering data from which to recommend the best truck investment you can make.

★ ★ ★

Your Dodge dealer is interested in your continued satisfaction: *First*, by selling you a truck that fits your job; *Second*, by giving you dependable Dodge truck service; *Third*, by providing you with truck parts that are identical with original Dodge "*Job-Rated*" truck parts.

ONLY DODGE BUILDS "*Job-Rated*" TRUCKS

DODGE

Fit the Job . . . Last Longer !

COMMERCIAL CAR JOURNAL

with which is combined Operation & Maintenance

Reg. U. S. Pat. Off. Published monthly Member C.C.A.
Acceptance under the Act of June 5, 1934, authorized December 18, 1934

LXXIII Philadelphia, August, 1947 No. 6

JULIAN CHASE, Vice-Pres. and Directing Editor
GEORGE T. HOOK, Editor
A. W. GREENE, Managing Editor
CHARLES B. RAWSON, Associate Editor
M. K. SIMKINS, Technical Editor
JOSEPH GESCHELIN, Detroit Technical Editor
LEONARD WESTRATE, Detroit News Editor
MARCUS AINSWORTH, Statistician
HOWARD KOHLBRENNER, Art Director
GENE HARDY, KARL RANNELLS, GEORGE BAKER
Washington News Editors
R. RAYMOND KAY, Pacific Coast Editor

EDITORIAL CONTENTS

Copyright 1947 by Chilton Company (Inc.)

CCJ Reader Digest 33

FEATURE ARTICLES

Mechanic's Questionnaire Screens Applicants 34
Spark Plugs Tell a Three-Part Story 38
Body Shop Saves up to 40 Per Cent 44
Governors—A CCJ Round-Up 46
Correct Application of Motor Trucks 49
Fleets Get Good Results from Tune-Up Oils 55
Trouble Shooting Power Train Assemblies 57
Midget Tractor for Fleet Promotion 61
Driver-Mechanic Contest Cuts Costs 62
Engine Deposits Resulting From Fuel, Oil and Temp. 68
Truck Tricks Smooth Fleet Operation 70
New Slants on Shop Practices 71
Gramm Trailer Presents Truck Body Line 76
New IHC-Continental Engine 104

DEPARTMENTS

Shop Hints 40
The Overload 43
Fleet Shop Manual 57
Free Publications 64
New Products 65
CCJ Quiz 72
Laugh It Off 78
Detroit Dispatch 80
Washington Runaround 82
New Registrations 84
CCJ Newscast 86
Introducing 90
Truck Specifications 93
Fleetman's Library 167

G. C. BUZBY, President and Manager, Automotive Division
E. W. HEVNER, Cir. Mgr. E. H. MILLER, Adv. Mgr.

REGIONAL BUSINESS MANAGERS
RUSSELL W. CASE, JR., Philadelphia A. R. ECKEL, New York City
E. E. ELDER, Detroit J. A. LAANSMA, Detroit
JOHN C. HILDRETH, Cleveland
F. O. KIRKPATRICK, Chicago HARRY T. LANE, Chicago
C. H. WOOLLEY, San Francisco AUGUST HAURIN, JR., Los Angeles

OFFICES
Philadelphia 39, Pa.—Chestnut & 56th Sts., Phone Sherwood 7-1424
New York 17, N. Y.—100 E. 42nd St., Phone Murray Hill 5-8600
Chicago 1, Ill.—Rm. 916 London Guar. & Accident Bldg., Ph. Franklin 4243
Detroit 2, Mich.—1015 Stephenson Bldg., Phone Madison 2090
Cleveland 14, Ohio—1030 Guardian Bldg., Phone Cherry 4188
Washington 4, D. C.—1091 and 1093 National Press Bldg., Phone District 8110
San Francisco 5, Cal.—605 Market St., Rm. 608, Phone Sutter 4951
Los Angeles 1, Calif.—6000 Miramonte Blvd., Phone Lafayette 5525

SUBSCRIPTION RATES: United States and United States Possessions and all Latin-American countries—$5.00 per year. Canada and Foreign—$10.00 per year. Single copies—50 cents. April issue, $1.00.

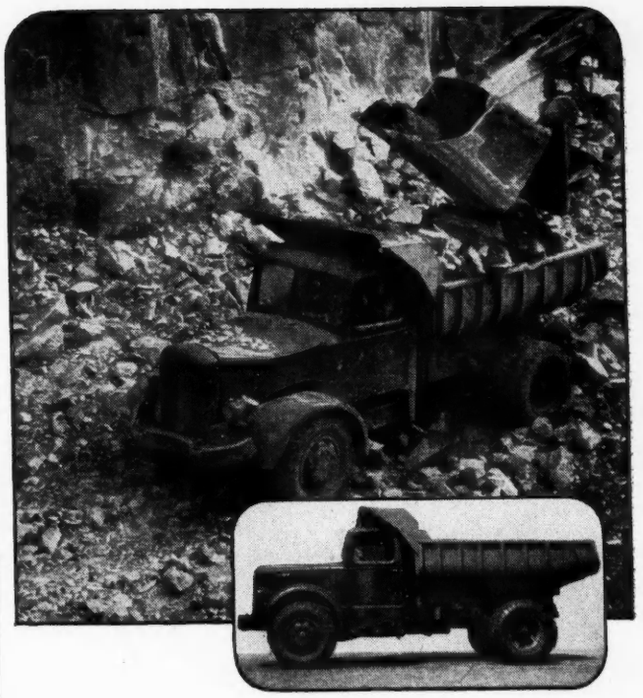
Owned and Published by
CHILTON COMPANY (INC.)
Executive Offices
Chestnut and 56th Streets, Philadelphia 39, Pa., U.S.A.

Officers and Directors
Jos. S. HILDRETH, *President*

Vice Presidents
EVERIT B. TERHUNE P. M. FAHRENDORF JULIAN CHASE
THOMAS L. KANE G. C. BUZBY CHARLES J. HEALE
WILLIAM A. BARBER, *Treasurer* JOHN BLAIR MOFFETT, *Secretary*
HARRY V. DUFFY T. W. LIPPERT FRED V. COLE

WILLIAM H. VALLAR, *Asst. Treas.*

PAUL WOOTON, *Washington Member of the Editorial Board*



When you throw
ROCKS
at your Equipment...
specify St.Paul HYDRAULIC

ONE LOOK at this unit tells you it has seen plenty of rough treatment. The size of the rocks being handled, the caved in hood, all the details speak for themselves . . . especially when compared with the smaller photo, taken when the truck was new.

Winston Bros., Contractors, are using 6 trucks like this one on a railway relocating job near Williamsville, Missouri.

The 5 cu. yd. St.Paul Rock Body is made of ¼" plate with wrap-around I-beams. Body floor is ¼" plate with 2" oak liner. Hoist is Model 92 St.Paul Hi-Dumper. Most important of all—after 3 years of this kind of service these St.Paul equipped units are STILL ON THE JOB!

● YOUR ST.PAUL DISTRIBUTOR IS AT YOUR SERVICE

ST.PAUL HYDRAULIC HOIST DIVISION
GAR WOOD INDUSTRIES, INC.
2207 University Ave. S. E. • Minneapolis 14, Minn.

THE MOST
COMPLETE LINE OF
TRUCKS BUILT
4,400 to 90,000 lbs.
Gross Weight Rating
This Emblem
INTERNATIONAL
Identifies
Great Trucks
1947
International W-9064-OH, a giant in size and load-carrying capacity.
International KBR-12, a big truck-tractor for fast highway transport.
International KB-6, with low frame, for easy loading.
International KB-3-M, with Metro Body, for multi-stop deliveries.
International KB-1, with pickup body, for a long list of uses.

5 of 1,000 *Specialized* INTERNATIONAL TRUCKS

AMERICA needs trucks *specialized* to their jobs. And International Harvester supplies them—more than 1,000 types, with chassis, engines, transmissions and axles expertly fitted to the work they are to do.

That's one reason why more heavy-duty International Trucks have served American commerce and industry for the past 16 years than any other make.

Another is the rugged strength, long, trouble-free life, and ease and economy of operation that are as much a part of every International as the famous Triple Diamond Emblem on the hood.

Specialized International Service backs International Trucks. This *specialized* service is quickly available everywhere from the nation's largest company-owned truck service organization—International Branches—and thousands of International Dealers.

40TH ANNIVERSARY OF INTERNATIONAL TRUCKS
1907-1947—Forty years of International Truck Service to Commerce, Industry and Agriculture

Motor Truck Division
INTERNATIONAL HARVESTER COMPANY
180 North Michigan Ave., Chicago 1, Illinois

Tune in "Harvest of Stars" Sunday! NBC Network.

INTERNATIONAL

INTERNATIONAL *Trucks*

CCJ READER DIGEST

DO YOU KNOW THE ANSWERS?

Can you diagnose an engine's condition from the appearance of the spark plugs? See Page 38.

How many engines will Ford offer on 1948 Models? See page 80.

Do you know what benefits fleets get from the use of tune-up oils? Page 55.

WILL THESE TIPS HELP YOU?

Want to brush up on practical pointers for locating and correcting power train troubles? Page 57.

Are you familiar with the popular types of governors and their service? Page 46.

See what a progressive truck fleet has done to "tune-up" operation. Page 70.

Correct Application of Motor Trucks

APPLICATION of trucks through the years has always been an attempt to fit the truck to the job. Manufacturers have always published specifications on their trucks, and many operators have known their trucking needs. Still, all too frequently the result has been a loose fit between truck and job. The main fault seems to stem back to the kind of analysis the operator makes of the job he expects the truck to do.

This article is the first of a series that will outline the following eight steps necessary to fit the truck to the work:

1. Analyzing the operating requirements.
2. How to calculate engine horsepower requirements.
3. Determining wheelbase and chassis model size.
4. Selection of correct size and type of tires.
5. Determining correct type and capacity of rear axle.
6. How to determine the correct rear-axle ratio.
7. Selecting the correct transmission.
8. How to select other equipment.

The first step is fully discussed in this issue. It deals with information needed about type of operation, materials to be hauled, operation conditions, hauling conditions, state legal restrictions, performance requirements and illustrates an excellent truck analysis requirement form that simplifies the analysis and insures consideration of all vital factors. See page 49.

Engine Deposits

by E. J. BOWHAY, and E. F. KOENIG
The Texas Co. and by
W. J. BACKOFF, The Pure Oil Co.

RESULTS of laboratory investigations to alleviate low temperature engine deposits show that:

1. Improved engine cleanliness may be obtained by assuring more complete combustion with certain fuels.
2. The relative amount of contaminants remaining in the oil or deposited upon engine parts depends upon the ability of the oil to retain them in suspension.
3. The most viscous lubricating oil consistent with starting requirements and other factors should be used.
4. Every effort should be made to maintain operating jacket temperatures in the 160-180 deg. F. range.
5. Crankcase oil temperature should be maintained at approximately 180 deg. F.
6. Intake mixture should be maintained at the highest value consistent with freedom from induction system deposits, loss of power and detonation.
7. Alleviation of the low temperature sludge problem through carburetion is not feasible.
8. There was a marked reduction in engine deposits with more frequent oil changes.
9. Best reduction of engine deposits can be obtained by the use of an efficient full-flow oil filter. See page 68.

Driver-Mechanic Contest

by G. E. HAMILTON, Safety Director, Price's Creameries, Inc.

A LITTLE more than a year ago we instituted a driver safety contest for the 36 route drivers assigned to our El Paso plant. Each was given 2000 points at the start and from this deductions were made for accidents, failures to report accidents, and conditions of the trucks. Because of this latter feature it soon became apparent that the mechanics should be brought into the contest and an award was set-up for a goal of 15 per cent reduction in maintenance cost.

As a result of the contest accidents fell way off and stayed there. Our current rate is 1.54 per 100,000 miles with no major accidents at all. What is more, the shop crews accomplished their 15 per cent cut and have held this figure ever since. The pay-off with a banquet for all, including wives, $20 for each mechanic, and the awarding of substantial prizes to the winning drivers. We had to resort to lottery for the latter in as much as there were 12 with perfect scores. See page 62.

Fleet's Body Shop Saves 40%

by RUSSELL OLIKHAULT, Supt. of Body Shop, Union Transfer Co.

OUR body shop, with seven full-time employees, handles rebuilding work for our fleet of more than 500 units. This work breaks down in order of frequency as follows: 1. repairs from accidents, 2. building new bodies (many with war surplus metal), 3. modernizing equipment (i. e., installation of refrigerating units), 4. reconditioning units for sale, and 5. general shop work such as the building of a new overhead door.

We have found two outstanding advantages: First we are able to handle the work in the above five classifications with a 30 to 40 per cent saving. Second, we are able to get the work out when it is needed. During the past few years this has been even more of an advantage than the dollar savings. See page 44.

Mechanic's Questionnaire

by ARO LEKANDER, Shop Superintendent, Detroit Creamery

LONG ago we decided that the basis of economical and efficient fleet operation is a staff of competent mechanics. During the war years there was not much we could do about it. We had time to shape up our plans. We wanted a pre-employment test that would tell us, 1. whether a man was really a mechanic or just a handy man, 2. something about his character, reliability, etc., 3. whether the man is an all around mechanic or a specialist —we need both, 4. whether the man should start right in as a mechanic or be classified first as a helper.

We believe that our mechanic's questionnaire accomplishes all of these functions—and more. It saves a great deal of time by weeding out the obviously unfit; it tells the applicant what kind of man we expect and we have found some applicants who downgrade themselves; most important of all it has greatly increased our shop efficiency. See page 34.

Mechanic's Questionnaire

Effectively Screens Applicants

Pre-interview test weeds out the duds, measures technical knowledge, boosts maintenance efficiency, cuts hiring time and reduces shop turnover by 75%

by *ARO LEKANDER*
Supervisor of Garage Personnel & Driver Training, Detroit Creamery

YOUR SUPERINTENDENT OF Transportation, Mr. R. E. King, and I long ago agreed that the basis of economical and efficient fleet operation is a staff of competent mechanics. These must be able to competently handle any situation which they may encounter in the day's work.

During the war many things transpired which caused us to wonder just what percentage of mechanics are deserving of the name. For this was a period which, above all others, threw into unprecedented and glaring relief the quality of the work of all journeymen automotive mechanics.

Shortage of parts, inferior parts, poor substitutes and utter lack of materials all served to amplify tremendously the importance of good maintenance work. It also highlighted the necessity of having competent mechanics to do the job.

During the war there was not much we could do to actually alleviate the situation. But these months, we now believe, were profitably employed nevertheless since it gave us time to decide what corrective measures we could apply in the postwar era. Naturally, this involved developing some definite plans which would lead us to our ultimate goal of employing only first-rate mechanics.

The plan did not evolve overnight. Extensive research and preparation were necessary as preliminary steps. But bit by bit our pre-employment screening test took form. We believe it to be comprehensive, flexible and yet detailed enough for our purpose.

The basic requirements of our plan are simple. These requirements are an elevated standard which we strictly adhere to when considering applicants and a thorough qualification and classification of our prospective mechanic *before* hiring.

In our opinion the most expensive manner of gaging a mechanic's ability is to hire him after a standard interview and put him to work. He *may* be a mechanic. But if he is not he is an expensive liability; a non-productive investment. Try to visualize the cost incurred in your organization by the old methods of employing mechanics as indicated above.

Primary Benefits of Test

AS WE shaped our plan our reasoning ran somewhat as follows:

1. Tests are necessary to prove whether a man is really a mechanic or just an individual handy with a screwdriver. References cannot be relied upon because we know nothing of the standard of work required by former employers. Too often recommendations are written from the sentimental viewpoint rather than the practical one. Our conviction in this respect is so strong that we seldom bother to check with previous employers.

2. Besides giving us a picture of the man's technical knowledge and mechanical ability the screening test would also assist us in forming an estimate of character, reliability, willingness, industry, degree of co-operation, etc.

3. The test would show whether the man is an all-around mechanic or a specialist. We need the all-around man in our operations.

4. Time spent in other garages is not in itself proof that the man is a mechanic such as we would want.

TRUCK MECHANIC'S QUESTIONNAIRE

Date_____

Name_____ Address_____

Age_____ Telephone_____

Grade School_____ Yrs. High School_____ Yrs.

How Many Years Experience?_____

Are You an Auto School Graduate?_____

Did You Learn by "picking it up"?_____

Where have you worked for the past 3 years? (Fill in below)

_____

_____

_____

Are you experienced on Heavy trucks? Yes___ No___

Tractors? Yes____ No____

What makes of truck are you experienced on? Check below:

Make	Type		Diesel	Experience			Remarks:
	Truck	Tractor		Exc.	Av.	None	
1. C.M.C.							
2. MACK							
3. DODGE							
4. FORD							

Mechanic's Questionnaire starts off along conventional lines but by bottom of first page gets down to fine detail. Other truck makes are also listed

What is your experience on the following:

	Exc.	Av.	None	Remarks:
Engine Overhaul				
Cylinder Grinding				
" Honing				
Piston Fitting				
" Pin "				

Excerpts show types of questions asked. Engine overhaul questions (above) also include experience on timing gears and chains, bearings, valve and valve seat grinding and refacing

In addition to engines (above) and brakes (below) questionaire covers transmissions, clutches, steering gears, all types of rear axles and various electrical equipment items

	Exc.	Av.	None	Remarks:
Brakes				
Mechanical				
Vacuum				
Hydraulic				
Air				
"Front Wheel Cutout" Control				
"Trailer Brake Control" on Steering Post				

Just because he is "mechanically inclined," "picks things up quickly" or likes to work on his own or his neighbor's car does not mean that he is a mechanic. Neither does the fact that he carries around a battered, worn-looking box of tools. Our test had to pierce this camouflage. It had to prove the applicant was a mechanic in the fullest sense.

ARO LEKANDER

5. The test would show whether the applicant had technical training and experience enough to start right in as a fully qualified mechanic; or if he had the fundamentals but lacked experience and advanced training; he would often be fitted into our schedule as a mechanic's helper, a greaser or a washer. By building up a reservoir of such men we would be taking the necessary precautions to insure mechanics for the future; a very important consideration in view of the present scarcity of mechanics.

About two years ago we put our screening test into operation. We call it the "Truck Mechanic's Questionnaire." It is working very well for us. We do not consider our questionnaire perfect nor the last word since conditions are in a state of constant flux and change. But to keep the questionnaire up to date, to allow it to meet changing requirements, we are constantly planning revisions with an eye to obtaining more complete pre-interview information.

Informal Atmosphere

THE QUESTIONNAIRE is officially the very first step in our screening process. It is presented to the applicant in a large room fitted with a long table, several chairs and a blackboard. The applicant may be alone or sometimes two or three applicants may take the test together. From time to time I walk into the room to (a) see that the man is not referring to some little black book, (b) to let him get better acquainted with me, (c) to help put him at ease (sometimes talking about the weather or the man's family helps a lot) and (d) to permit him to ask clarifying questions. Often if the man appears promising but stumbles over a particular question, we will diagram it

(TURN TO NEXT PAGE, PLEASE)

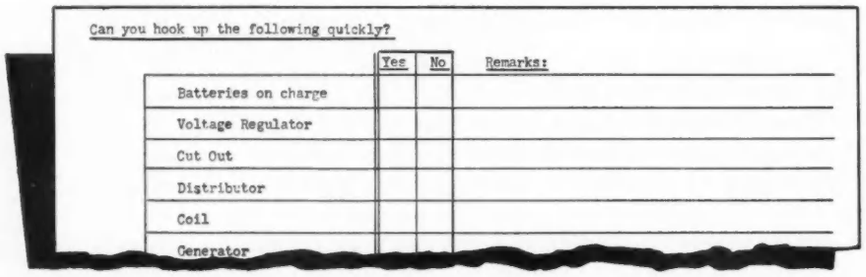
Mechanic's Questionnaire . . .

Continued from page 35

out for him on the blackboard. There is a question about why a carburetor floods when, apparently, the float is in order. By illustrating the question we often find that the man has forgotten only the technical aspects, and that when he sees the diagram he can answer correctly.

The informal atmosphere which prevails during the filling out of the questionnaire also gives me an opportunity to judge the intangible but none-the-less vital qualities of the applicant such as initiative, intelligence, perseverance and attitude. Impressions gathered then are more easily crystallized during the final interview which follows the questionnaire.

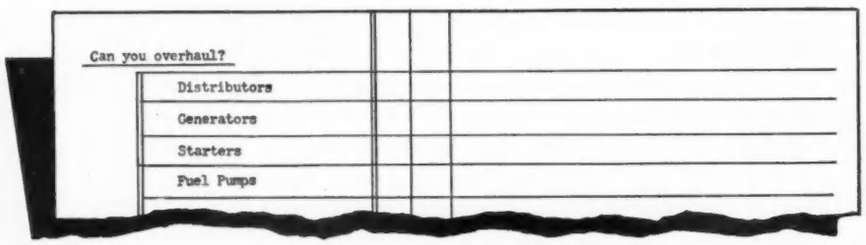
We have found that when two or more applicants work on the questionnaire at the same time there is little likelihood of cheating. This is because they are competitors. The man who knows the answer is reluctant to pass it on to the other fellow, and applicants are leery of the other fellow's answers because of the fear of a "bum steer."



Can you hook up the following quickly?

	Yes	No	Remarks:
Batteries on charge			
Voltage Regulator			
Cut Out			
Distributor			
Coil			
Generator			

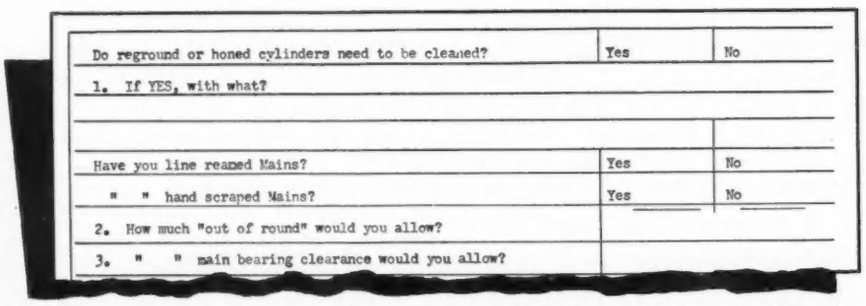
"Hook up" questions also include coil, generator, starter, lights and horn



Can you overhaul?

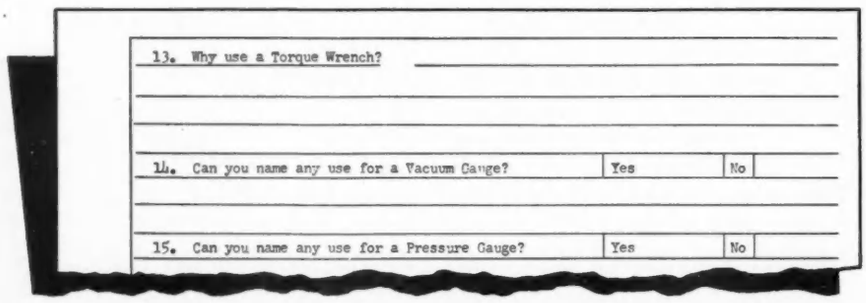
Distributors			
Generators			
Starters			
Fuel Pumps			

Popular carburetors are listed next, plus questions on use of test equipment



Do reground or honed cylinders need to be cleaned?	Yes	No
1. If YES, with what?		
Have you line reamed Mains?	Yes	No
" " hand scraped Mains?	Yes	No
2. How much "out of round" would you allow?		
3. " " main bearing clearance would you allow?		

By 6th page, questions are much more involved, no longer rely on applicant's say-so, but on his actual knowledge as exemplified by excerpts above and below



13. Why use a Torque Wrench?			
14. Can you name any use for a Vacuum Gauge?	Yes	No	
15. Can you name any use for a Pressure Gauge?	Yes	No	

Still other questions concern ability in ignition and valve timing, piston ring fit, gas and electric welding, special training, even driving technique

Interview Follows Test

A SUCCESSFULLY completed questionnaire which interests us means that we then grant the applicant an interview that may lead to his eventual employment. A poorly or incompletely answered questionnaire means we do not interview the applicant. Thus we do not waste time interviewing men whose questionnaire indicates that they would not meet our standards of qualification. Of course this not only saves time but also the expense of putting the applicant on the payroll and allowing him an actual trial in the shop.

Here are two actual illustrations of the manner in which the questionnaire almost automatically weeds out the undesirable mechanic at little cost of time or money to us.

Applicant No. 1 was handed the questionnaire immediately on coming in to see us. He studied its twelve pages of questions for some time without laying a pencil to paper. He could not answer the questions which proved to us that he was not the type of mechanic we wanted. The questionnaire also proved this to the applicant too, without the necessity of us telling him.

Man No. 2 made a gallant but somewhat futile attempt to answer the questions. He finally realized that, while he had formerly considered himself a competent mechanic, he obviously was not because he could not answer the questions. Needing a job but realizing he had not the necessary qualifications to be considered as a first-class mechanic he wrote across the top of his questionnaire, in bold, black, block letters "HELPER." Thus this man was honest enough to admit his own limi-

tations by reducing of his own volition, the status of the job he was applying for.

We sometimes ask the man who is not a first-rate mechanic if he will accept work as a helper or another classification of work in our garages.

Flexible Grading System

THE QUESTIONNAIRE we employ seems to be sufficiently flexible to prove advantageous to us in this respect. It comes in handy by permitting us to occasionally hire other needed help although the questionnaire is specifically designed to get us competent mechanics. For instance, we recently obtained a first class welder who was not doing any too well answering a questionnaire directed exclusively at mechanics.

We have lots of work for this man in our garage. Tank trailers need constant repair and attention. Frequently we have to cut them down in length and rebuild them to meet length-law requirements. We change manholes on trailers often.

An adequate system of grading or marking the answers on the questionnaire is important if the results desired are going to be achieved. In our system of grading we set up 85 per cent as a tentative requirement. We have found that if a man scores 85 per cent or over we can be sure that he has the technical knowledge and "knowhow" we require.

From 80 to 85 per cent still indicates a good man *providing* his knowledge is backed up by from 10 to 15 years experience. We don't go below the ten-year experience figure. Seven years experience is not enough.

Recently we employed a man who had had no particular technical training. But he had had 23 years of varied experience in the automotive service field. Thus this man's practical experience, tied in with what training he had, made him acceptable.

A certain amount of flexibility renders our test system more valuable to us than utter, uncompromising reliance on the test marks alone. But a man who made a mark of 94 per cent on the questionnaire is turning out excellent work in one of our garages.

A score of 70 to 80 per cent indicates a fairly passable mechanic, but not of the quality we are looking for. Men in this category would be asked to take a helper's job, if open.

Sixty to 70 per cent would indicate mechanical ability and some experience. This type of man could be used as a greaser or washer and aided to develop into a mechanic.

Although, of necessity, we must apply an arbitrary rating we try to keep the test as flexible as possible by using judgment in the personal interview following the successful completion of the questionnaire.

In reality the examination we give the promising applicant is a short refresher course and its valuable to him as well as to us.

In giving tests we make allowances for the poor reader or writer and in this case we give a more detailed verbal interview.

The Brain Teaser

Our "Truck Mechanic's Questionnaire" is composed of two parts; a straight question and answer division and a tricky division we call the "Brain Teaser." The first part of the questionnaire is comparatively simple, informative and is designed to give us an over-all knowledge of the potential employee's capabilities.

Should he overestimate his abilities in answering the simple questions of the first part of the Questionnaire our "Brain Teaser" section has a tendency to disclose these discrepencies.

This is the part many applicants stumble over; some complain that it is too tough. But we contend that these are items any first-rate mechanic should know. Some professed mechanics look over the questionnaire and leave without trying to fill it out. On the other hand we have had men score over 90 per cent.

We are satisfied in our own mind that our test has merit because no man passing it as a mechanic has failed to come through in actual operation in our shops.

115 Shop Personnel

Detroit Creamery has seven garages in Detroit, seven more up state. We employ a total of approximately 55 mechanics, 10 mechanic's helpers, and about 50 other shop personnel including foremen, greasers, welders, washers, painters. So far the questionnaire screening plan has been limited largely to the Detroit area, although we are putting it into effect in the up-state area as fast as possible. In the shops where it is in use we can show that our mechanic turnover has actually been reduced almost 75 per cent.

We have been asked what inducement the company offers as a reward for the high price of admission. Why should a mechanic go through all the trouble of completing our questionnaire if he can get an equally good job with the place across the street with no bother at all. Our answer is that we offer 52 weeks of employment per year, two weeks vacation with pay, good working conditions and 52 hours pay for a 48 hour work week. (The standard week is 40 hours; overtime accounts for the difference.)

Our shop is completely unionized but the union does not object to the questionnaire since the man is not yet an employee. Actually the union cooperates because it makes for better relationship between employer and employee. We have a 90-day trial or probationary period and after that, if the man has been hired in a lower capacity such as a helper he has a green light for advancement as soon as he can prove his worth and there is an opening.

Final series of questions are grouped in "Brain Teaser" category. There are about 60 such questions all designed to prove the applicants actual knowledge

Brain Teaser

Black Out Number Opposite Correct Answer

Which unit protects a generator?

1 Coil
2 Radio suppressor
3 Voltage regulator

Of the following which would cause an engine to stall at low speed?

1 Plugged pump jet
2 Partly plugged main metering jet
3 Air leak in the intake manifold
4 Plugged orifice tube

If valve springs are too strong they will cause?

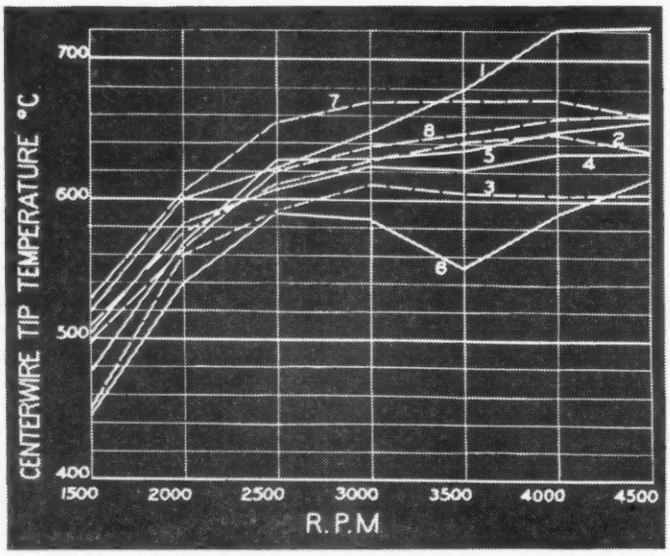
First operation before removing starter is to?

1 Remove generator lead wire
2 Loosen the fan-belt
3 Disconnect the battery cable
4 Remove the starter brushes

A dead ammeter with engine running indicates probable trouble as?

1 A cracked distributor cap
2 A broken fan belt
3 A loose fan-belt
4 A half-charged battery

Too much clearance between the oil pump body and gears would show up as a tendency for



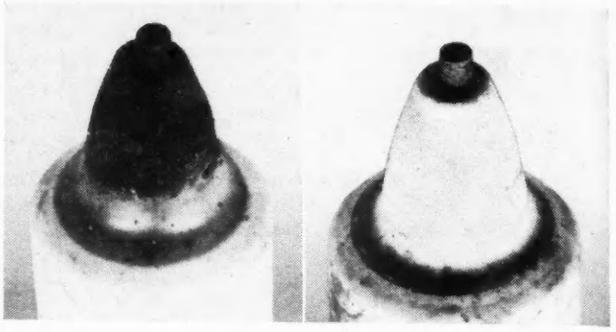


Fig. 1. Left. Graph shows cylinder to cylinder variation in temperature in an eight-cylinder engine operated at road load. Fig. 2. Center. A fouled eectrode due to low temperature operation. Fig. 3. Right. The same electrode after being subjected to a slightly higher output than that under which it became fouled

SPARK PLUGS Tell a

by
DR. W. A. BYCHINSKY

MUCH CAN BE LEARNED from an examination of a set of plugs removed from an engine not only regarding the behavior of the plugs but also regarding the operation of the engine. Spark plugs have often been likened to clinical thermometers in that they are indicators of many engine mal-functionings. Unfortunately this useful role has one undesirable aspect, namely that spark plugs are often blamed for the engine troubles which they reflect. In reporting spark plug difficulties it is important to include all other pertinent indications of the trouble so that an accurate diagnosis of the underlying cause can be made.

There are three general types of spark plug trouble. These are: (1) Effects of operation at excessive temperature. (2) Missing or roughness due to low speed or carbon fouling. (3) Missing or roughness due to high speed or lead fouling.

Let us consider these in more detail.

High Temperature

EXCESSIVE temperature can be due to several causes and can manifest itself in several ways. Broken insulator tips, discolored shells and badly corroded electrodes are the usual indications of excessive temperature operation although the latter, badly corroded electrodes, may also be due to corrosive agents in the gasoline such as high sulphur.

While the obvious remedy may be to use a colder, i.e. higher rating plug, this may not be the correct remedy. The original plug may have been in the correct heat range but it could have operated at a higher temperature than normal because of leakage past the engine seat gasket. Such leakage could be due to improper tightening, or to the use of worn or distorted gaskets or to defective gasket seats on the cylinder head. A good seal at this point is important if normal plug operation is to be insured. Another cause of excessive temperature is through lean mixture operation occasioned by leaks in the intake manifolding.

Abnormally high temperatures can also be induced by operating the engine under conditions of excessive detonation or knock. This can be attributed to the anti-knock quality of the fuel used, or to the presence of hot spots in the combustion chamber due to faulty circulation of the coolant, or to the build-up of heavy carbon layers on the walls of the combustion chamber and dome of the piston or, finally, to incorrect spark advance. Some of these faults may even lead to destructive preignition.

(TURN TO PAGE 116, PLEASE)

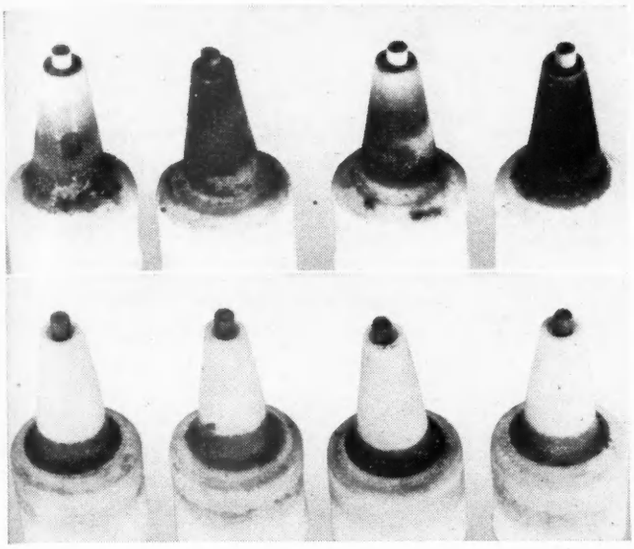
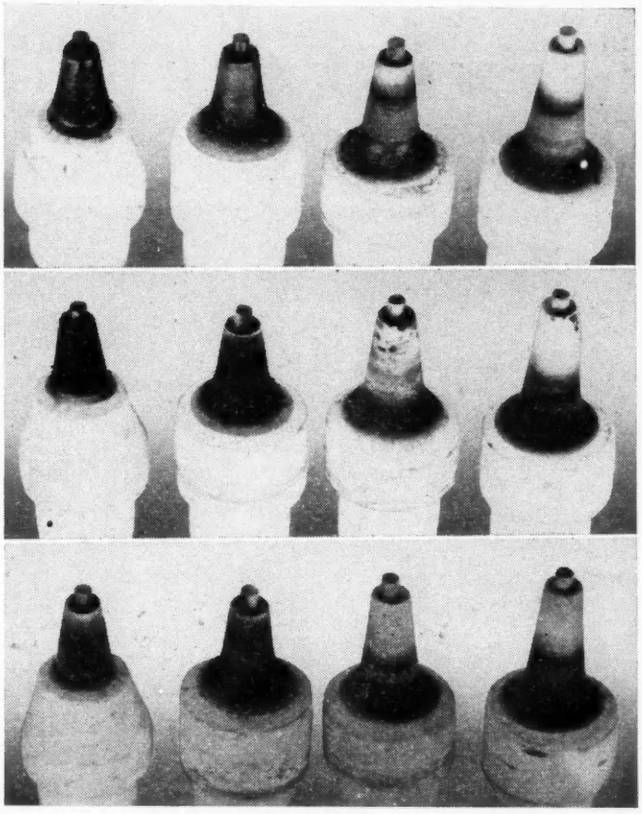


Fig. 4. Left. Insulators from plugs operated in an engine at low output. The corresponding insulators, Fig. 5, below, were operated at higher output and show little or no corrosion



Three-Part Story

Black carbon fouling; lead fouling; and broken or discolored shells and electrodes indicate definite operational troubles

Figs. 6, 7, 8. Above. Show plugs of different heat ranges operated under identical engine conditions for three different cylinders of an eight-cylinder engine

Fig. 9. A badly-fouled spark plug showing a coating of lead oxide and other lead salts on tip of insulator

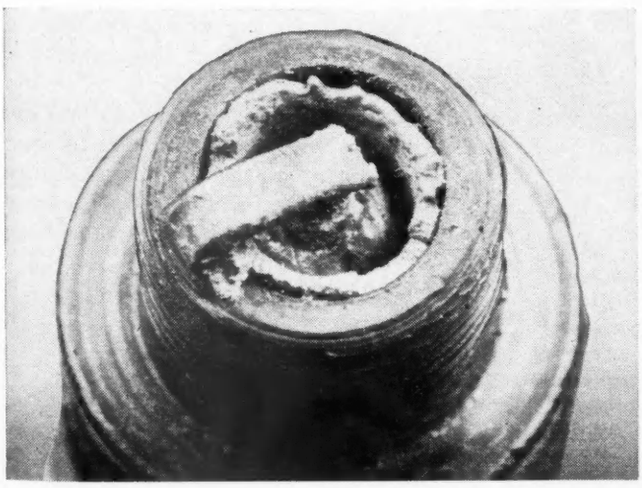
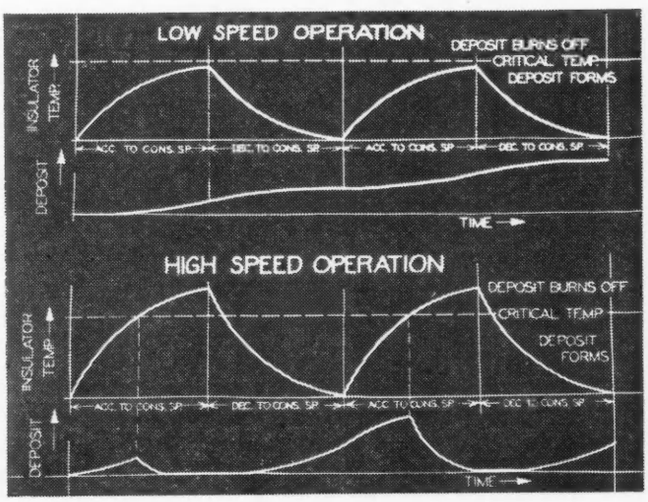
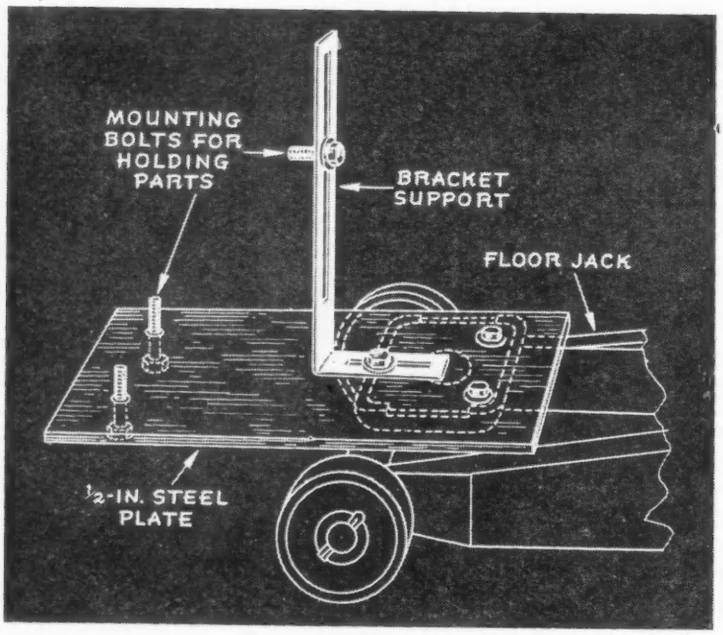


Fig. 10. Graph shows the effect of the level of operating temperature on the build-up of carbon deposits



SHOP HINTS
FROM FLEET SHOPS

Here are the staff's selections for this month. Is your name among them? Will it be next time? Remember, men, this is your department—reserved for your pet tips on truck service—or your favorite shop-made



Portable Truck for Heavy Units

by Clinton B. Baker
State Roads Commission, Easton, Md.

$25 HINT OF THE MONTH

Here is the way we convert a standard portable shop jack to a carriage for moving heavy transmissions and rear ends or similar assemblies.

It is only necessary to add a few brackets to accomplish this. The base plate is an 8 x 12-in. sheet steel with three holes drilled to bolt it to the top of the jack. The third hole is used as a mounting for the adjustable bracket as shown. At the forward end of the plate two holes are drilled and a nut welded to the plate to take studs. These are used to bolt the assembly to any part that is carried, or they may simply be adjusted to hold the unit in position on the frame.

The adjustable bracket is made of ¾-in. strap iron, slotted to take a mounting stud. The strap is bent at right angles and is also adjustable on the base so that it can be butted against the part to be carried and held securely by means of the bracket and mounting bolts.

1. Vacuum Fitting

by George L. Wyke
Homestead, Iowa

I have seen many mechanics lose their patience when trying to connect the vacuum line to the distributor on the V-8 Ford. It is hard to start the threads in the distributor connection, hard to line up and hard to get at.

I cut a 3-in. piece out of the vacuum line near the distributor and slip a length of wiper hose over the ends, connecting them and making a flexible fitting. This will enable the mechanic to slip off the hose and start the fitting when replacing these lines. It saves a lot of time and patience.

2. Windshield Wiper

by Tim Vahle, Super. Foreman
Iowa Ordnance Plant Garage
Burlington, Iowa

I have a little trick that fixes up most windshield wipers when they become sluggish or will only operate in one direction.

Simply remove the cover from the valve mechanism and take off the small fibre tripper. With a point file, file out the corners of the slot as shown by the dotted lines and replace it.

This tripper gets worn and will not throw the lever far enough to open the valves all the way. This change will do the trick.

$5 FOR ALL HINTS PUBLISHED EACH MONTH

tool—or any idea that will save time and money in vehicle maintenance. Many times we find that a tool or a procedure used as common practice in some shops is new to others. So get a piece of paper and put it down—now while you are thinking of it. You'll be paid for your trouble. Selected contributions receive $5—AND—each month one is awarded $25 as the Hint of the Month. How about a contribution from you soon?

3. Grease Rag Storage

by David J. Seigel, Maine, Supt.
Metropolitan Distributors, Inc.
New York, N. Y.

With a little time and material, you can construct a sturdy fireproof storage cabinet for flammable products such as paint, oil, greasy rags, etc. Materials needed are a steel oil drum, some boards and stove bolts.

Layout a good size opening for the door, cut square and clean with metal shears or a hacksaw. Reinforce the opening with wooden strips bolted to the edges. Drill holes in each compartment for vents. Bolt cross pieces at the center and lay boards across for the shelf. The shelf is made in three sections and space can be left between the boards for ventilation, preventing spontaneous combustion.

4. Wheel Dolly

by George E. Millot
General Baking Co., Springfield, Mass.

I have made a little gadget that I think has a recent shop hint winner's beat a mile. This is a portable dual wheel dolly made up from spare parts that are always floating around a shop.

I made a carriage out of 2 x 2-in. hard wood strips bolted to angle irons 15 in. long. The side rails are 20 in. long and are bolted to the angle irons as shown. To this frame I attached four old creeper casters. The dual wheel assembly is placed on this carriage and moved to the truck. Then the vehicle is lowered with the jack until it is in proper position.

With this device there is little lifting and pushing necessary when assembling heavy wheel assemblies.

5. King Pin Change

by Stanley Rojefski, Shop Foreman
Parks Dairies, Camden, N. J.

I have had trouble keeping king pins tight in D2, D15, K1, K2 and K3 Internationals. The king pins come loose in the axle because it carries a heavy drum and tire. The wedge pin seems to be too small.

I tried a different pin and eliminated this trouble, by using a No. 5 tapered reamer and by reaming out the hole to fit a No. 5 tapered pin. These pins are larger and have more taper to wedge the king pin tighter in the axle.

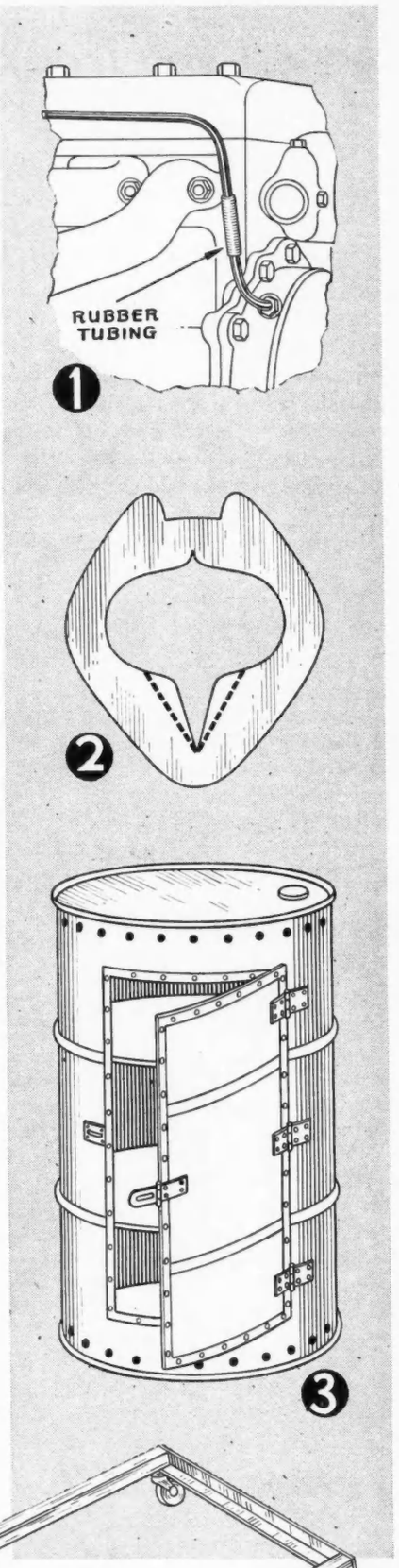
6. Flywheel Removal

by C. M. Vanderwal
Portland, Oregon

On large truck engines the flywheels are quite heavy and hard to handle in the close quarters of the bell housing. Sometimes, when removing them, they slip and break the bell housing.

To eliminate this and make it easy

(TURN TO NEXT PAGE, PLEASE)



SHOP HINTS from Fleet Shops

(Continued from page 41)

to do, remove the highest one of the cap screws holding the flywheel. Get another cap screw of the same size thread and 4 in. long and cut the head off. Screw this threaded stub into the flange of the main shaft. Remove all other cap screws and let the flywheel rest on this stub. It can then be slipped over the end and removed. The same system can be used when replacing the flywheel.

7. Axle Puller

by L. E. Eyler
Altoona, Pa.

Here is my version of a handy puller for removing the short section of a broken axle shaft from the axle housing.

We simply take a length of ½-in. pipe (3 or 4 ft.) and slip two strands of soft iron through it, looping it at one end. After removing the outside end of the axle, insert tube into housing and loop wire around broken axle stub. Push on the pipe and pull on the wire. This will enable one to get a tight grip on the axle and will hold it until it is removed.

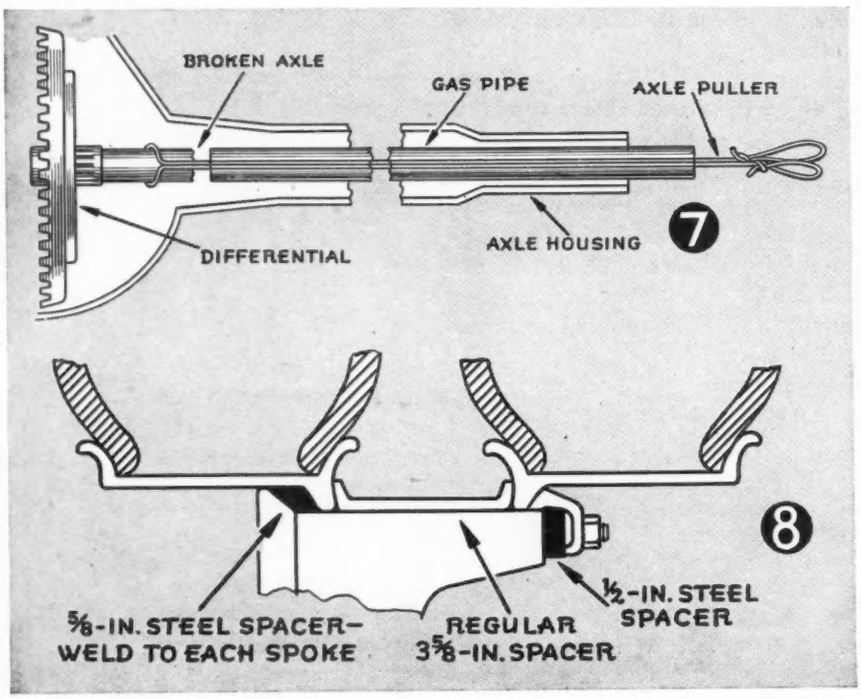
8. Dual Tire Spacers

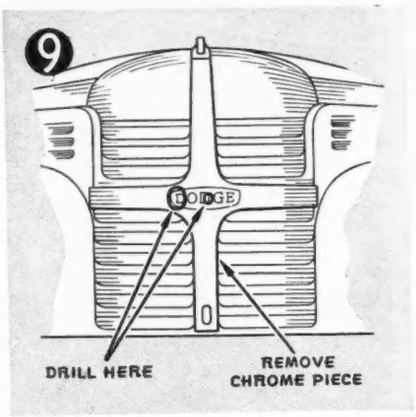
by C. Coraggio, Shop Foreman
Trailer & Truck Repair Co.
Secaucus, N. J.

In our line of work we reinforce some trailer frames to carry heavier loads, and we find that the 10.00 x 20 tires would rub on the spring clips on the inside. We tried ⅝-in. spacers between the inside rim and wheel, but we found we couldn't keep the lugs tight.

The enclosed drawing will show how I overcame this trouble and how we use 12.00 x 20 tires mounted on 9- and 10-in. rims with plenty of space between the tire and spring clips.

Weld a ⅝-in. spacer to each spoke on the outside as shown. Use a ½-in. steel spacer cut the same width as the spoke and weld it to the outside. With a regular 3⅝-in. spacer between the rims, this conversion will work very well.





9. Distributor Tube

by Z. P. Patchin
Ohio Cloverleaf Dairy
Toledo, Ohio

Here is a tip that will save many hours in service time on the cooling system. To remove the water distributor tube on the Dodge TE30 and other models of Dodge trucks, remove the radiator core and water pump and the cross brace on fender supports Remove the name plate chrome moulding center piece on front of grille and drill two holes, 2¼ in. apart at right side of grille in line with water type opening at front of block.

This will save removing the radiator shell, braces and other parts when doing this job.

10. Clutch Installation

by Matthew F. O'Brien
Chicago, Illinois

I have serviced several of the Rockford heavy duty finger type clutches in Chevrolet trucks and have found an easy way to overcome the cramped working space in the latest models from 1942 on.

First, remove the wood blocks which the factory inserts between fingers and cover, and replace them with ones at least 11/32-in. thick. These heavier blocks compress the clutch enough so that it will slide in place easily.

Do not remove the release fork assembly. Enter the clutch so that it passes fork at one of the adjusting screws on top of cover. After clutch is bolted to flywheel, ease the wood blocks out with a screw driver.

The OVERLOAD

Why Should Truck Users Be Penalized for Car-Driver Carelessness?

IN cooperation with truck operators and truck and trailer manufacturers the I.C.C. Bureau of Motor Carriers is trying to find a way to prevent motorists from decapitating themselves when they crash into the rear of a trailer or a large truck.

* * *

In accidents of this type fatalities are said to be high because the hood of the automobile crawls right under the commercial vehicle and the front-seat occupants are literally and figuratively up to their necks in trouble. A sturdy bumper will, it is hoped, diminish the severity of such accidents. The reckless motorist may wish it were also equipped with radar so that the truck driver could avoid him, but for the time being that's out of the question.

* * *

The bumpers on a passenger car contribute not one iota to its safe operation. They contribute not more than one iota to decreasing the severity of an accident at 40, 50 or 60 m.p.h. They were devised originally to protect the radiator from being damaged during parking operations or when quick stops in congested traffic weren't quite quick enough. Car bumpers have grown in size simply because there is more on the front end that needs protection. The bumper on the rear affords protection for a vast expanse of sheet metal, when, as occasionally happens, it is of the same height as the front bumper of the car behind.

* * *

Truck front bumpers serve the same purpose as car bumpers. Trucks and trailers have special bumpers in the rear to protect them from damage when backing up to platforms, but a rear bumper similar to the front bumper has not been standard equipment simply because it has not been needed.

* * *

Is there a need now for such bumpers? Is it proper to compel truck operators to spend millions installing them so that a reckless motorist's neck will be broken instead of severed? How many accidents of this type occur in a year's time? How can it be determined that the presence of the bumper on the rear of a truck or trailer will reduce the severity of such accidents? Is the I.C.C. certain that by crashing into a solid piece of steel the reckless motorist will sustain less severe injuries? If not, then it is merely substituting a clean cut killing for a mutilation.

* * *

The I.C.C. must have answers to these questions before it can justify the huge outlay that truck operators will have to make. And the outlay will be huge, not only in the cost of the bumpers, but in the revenue that will be lost to carriers because of the additional deadweight. This is anywhere from $1 to $2 per lb., per year, per vehicle, according to common carriers. A 50-lb. bumper will run into big money.

* * *

Operators and manufacturers have a right to ask why the I.C.C., merely because it has jurisdiction, should think in terms of penalizing the truck user for the carelessness of the motorist? Why not let the motorist provide his own remedy: safe driving?

The Railroad Brand of Coordination Gets a Slapdown from ICC

THE Interstate Commerce Commission has long been suspected of a railroad bias in its dealing with motor carriers. Every now and then it is publicly accused of being "railroad-minded."

* * *

It is, therefore, a pleasure to note an instance to the contrary. The Frisco Transportation Co., a railroad-affiliated motor carrier, applied for an extension of its service to an airport. In denying the application, the I.C.C. ruled that only when no independent motor carrier is able and willing to furnish reasonably adequate service to a non-rail point would one with railroad affiliation be approved.

* * *

The extension of service to the airport would have given the railroad a coordinated rail-truck-air service which would have been exclusively its own. Coordination of transportation services is in the public interest. Motor carriers have so contended for many, many years. But their advocacy of rail-highway cordination has been resisted by railroad interests. The railroad attitude seems to be "to hell with helping the public if, while helping ourselves, it incidentally means helping a competing transportation service."

* * *

The railroads doubtless hope, with Congressional assistance, to attain in time their own brand of coordination. They call it "integration," which is another word for monopoly, because if integration were sanctioned by Congress, railroads would be permitted to acquire competing motor carrier, water and air transport services.

* * *

But since Congress is in no hurry to legalize integration, it is only natural that the railroads should try to grab for themselves exclusive coordination such as was attempted in the Frisco Transportation Co. case. It is likewise only natural that, in accordance with the declaration of policy in the Motor Carrier Act, the Interstate Commerce Commission should prevent the attempted grab. According to this policy it is the duty of the I.C.C. to promote coordination but not the kind that would be of exclusive benefit to the railroads.

←Continued in adjoining column

by GEORGE T. HOOK
Editor

By

R. OLIKHAULT

Superintendent of Body Shop
Union Transfer Co.
(Union Freightways)
Omaha, Nebraska

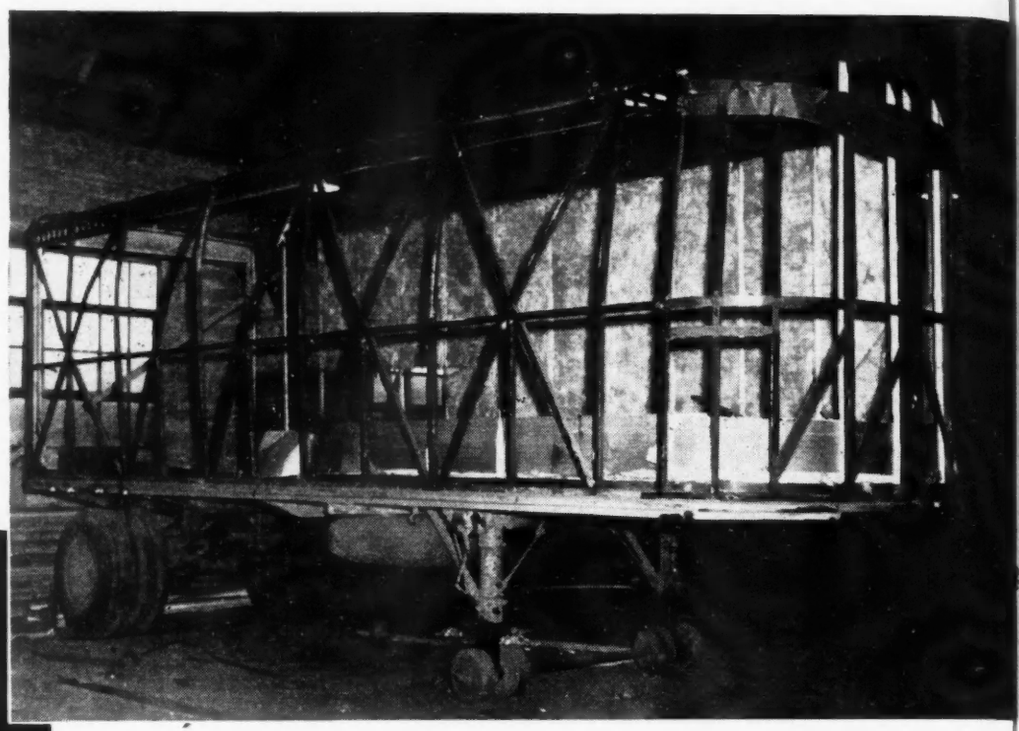


Fig. 1. Bad accident resulted in complete rebuild job for 28-ft. trailer. Labor cost was $780.66; material cost, using war surplus metal, amounted to $520.44

Fig. 3. Paint shop activities cover sign work too. All equipment, including trailers, display standardized stencil such as on this panel

Fleet's BODY SHOP

OUR BODY SHOP, with seven full-time employees, handles the rebuilding work for the more than 500 units of our fleet—trucks, truck-tractors and trailers.

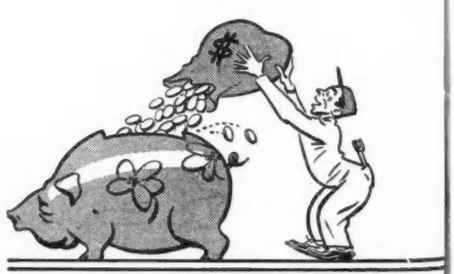
We have a separate building for the shop 40 x 100 ft. with full equipment. In addition we use as an additional work area, a section approximately the same size in the main garage.

Figured over the past four years, our work breaks down as follows:

1. Repair work from accidents.
2. Building new equipment such as trailers complete, pickup bodies, and special bodies.
3. Modernizing our equipment such as the installation of refrigeration units, etc.
4. Conditioning units which are to be traded in or sold and replaced by new equipment.
5. General work not on any of our over 500 pieces of equipment but which come to our shop because we have the machinery for handling the work. An example is making overhead doors, cabinets, etc.

The breakdown for the body shop on volume of work follows the above order, with repair from accidents accounting for the greatest part.

We have found that there are two outstanding advantages to having our own body shop: First, we are able to handle the work in the above five classifications with a 30 to 40 per cent savings. Second, we are able to get out the work when it is needed. The past few years this has been more of an advantage than the dollar savings.



Cost Figures for 10 Jobs

IT SEEMS to me the best way to give a fair picture of our average work is to list the last 10 jobs we have handled, and to give cost and time figures on each.

Job No. 1. Built complete three new pickup bodies (7 x 14 ft.) for 1½ ton pickups. The total labor and material cost on these three ran $1,351.90, or approximately $450 for each job. The labor charge on the three pickup bodies ran $664.10, and the material charge ran for the three $687.80. This shows an approximate

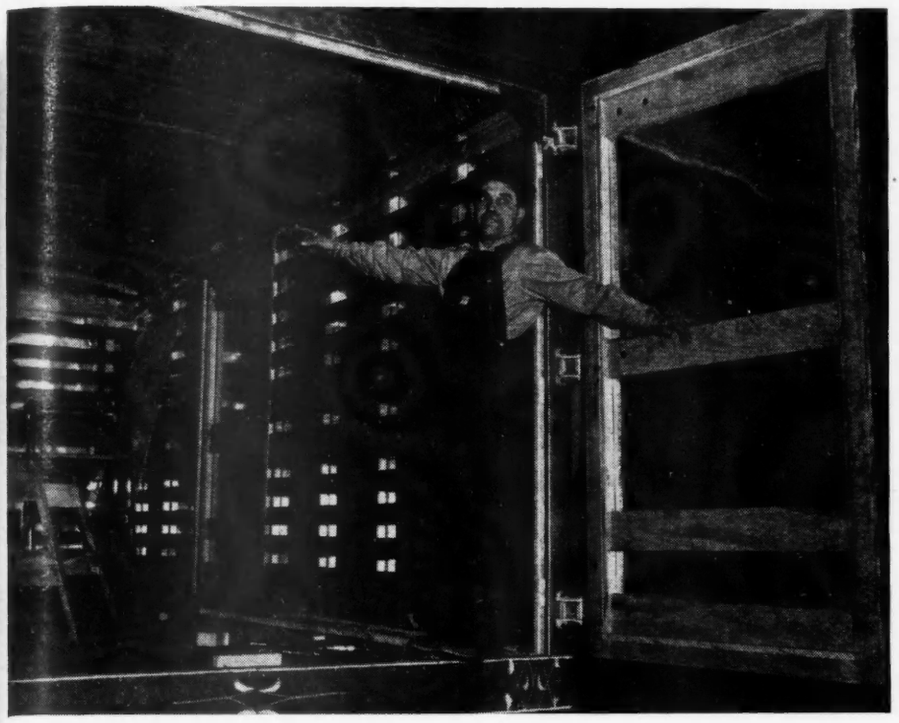


Fig. 2. Author Olikhault points to inside of insulated 8 x 15 ft. body under construction. With steel frames and aluminum sides total cost ran to $756.00

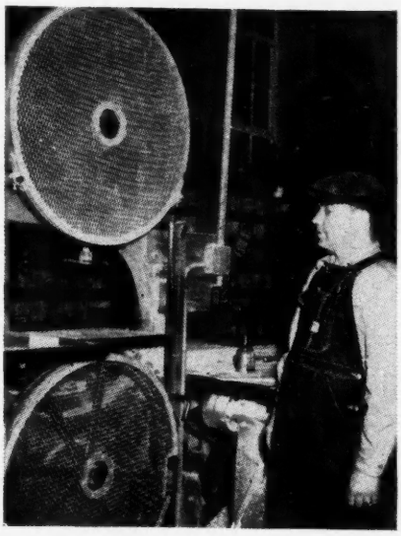


Fig. 4. Good-sized band saw shares shop space with joiners, rip and dado combination, metal brake and welders

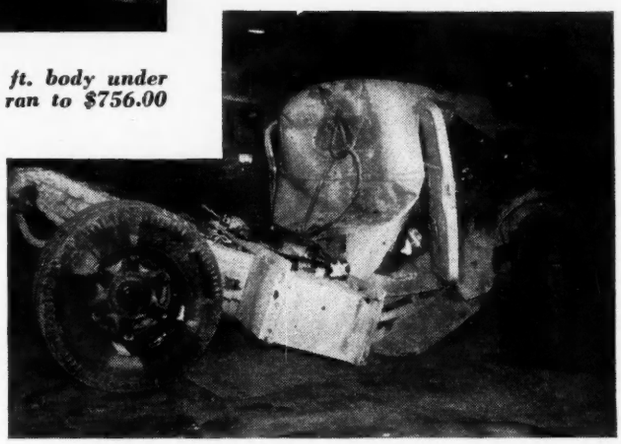


Fig. 5. Even jobs like this are handled in body shop. Tractor went over a 200-ft. embankment

Saves Up to 40 Per Cent

Output includes accident repairs, new bodies and special equipment; labor runs 45%, materials 55%; work is finished when needed

50/50 labor and material cost.

Job No. 2. New doors, metal with wood frames, for a 28-ft. trailer. Total cost, $126.99; $70.79 material and $56.20 labor. A ratio of labor, 45 per cent; material, 55 per cent.

Job No. 3. Built doors for our own shop (two overheads), with total cost running $399.50, broken down into approximately 50/50 labor and material.

Job No. 4. Complete new floor for a 26-ft. trailer, total charge, $126.40. This ran 39 per cent labor and 61 per cent material.

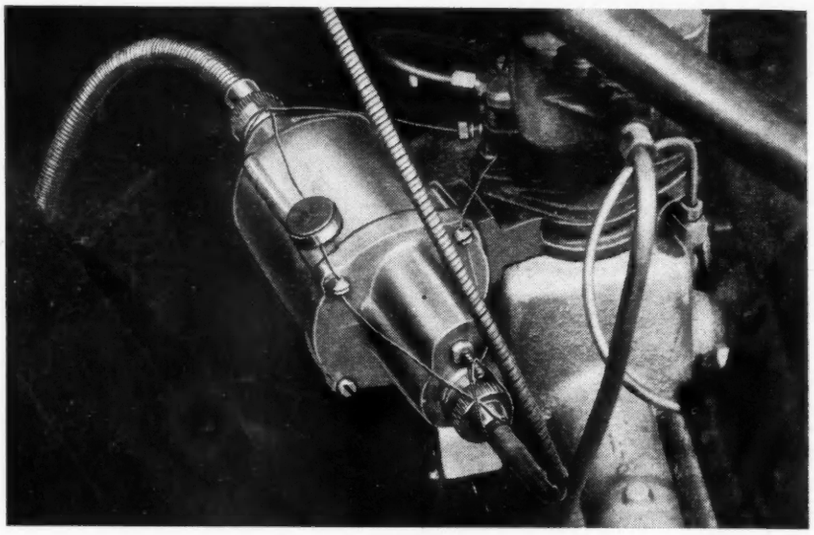
Job No. 5. New trailer body for a 28-ft. unit—result of accident. Total cost $1,301.10. Labor, $780.66; material, $520.44. A 60/40 labor-material ratio. (See Fig. 1.)

Job No. 6. Reconditioning a trailer (no accident) for a paint job. Total cost $247.00, $123 labor, $124 material—50/50 labor and material.

Job No. 7. Building and installing a dust proof cabinet 4 x 8 ft., 8 ft. high, in a moving van. All material plywood except braces. Total cost $173.47; $106.80, material; $66.67, labor, an approximate ratio of 60 per cent material to 40 per cent labor.

Job No. 8. Accident job. Rebuilding an almost complete 30-ft. trailer wreck, $1,465, approximately 50/50 labor and material.

(TURN TO PAGE 146, PLEASE)



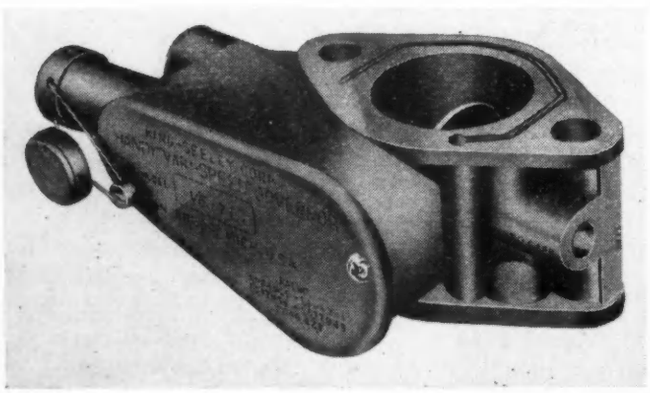
The Pierce Roadspeed Governor is installed at the manifold, with a flexible drive to the speedometer gear. Other models drive from a special distributor

GOVERNORS

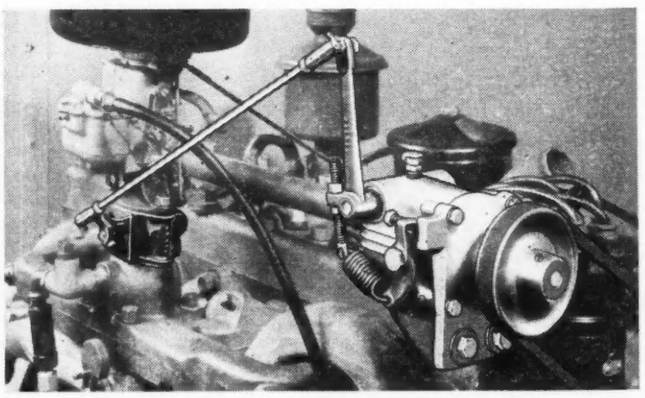
Their Improved Features
How To Order Them
Types Available
Methods of Adjustment
How They Are Locked
Service & Operation Details

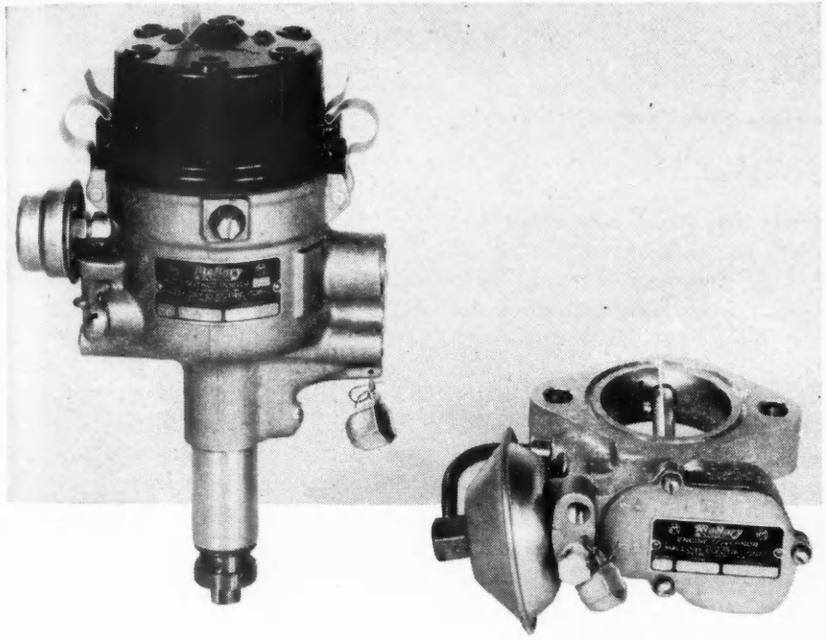
ALTHOUGH FLEETMEN are pretty well posted as to the advantages and features of most makes of governors for commercial vehicles, it is well to recognize that the art has advanced considerably in recent years. Taking into account the new developments as well as the improvements in familiar makes, the operator has a wider choice of governor types than ever before. He now has available hydraulic units, combinations with the ignition sys-

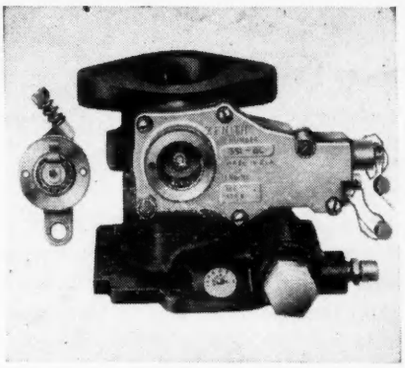
The King-Seeley governor is available in two basic types—the Handy velocity and the Vari-Speed velocity



Monarch offers two types—the centrifugal control driven from fan belt, and the vacuum-velocity type







Left. Mallory features a governor-distributor device in which manifold vacuum is used as a source of power

Above. The Zenith Gov-U-Retor is built as an integral part of the carburetor and operates governor throttle through manifold vacuum

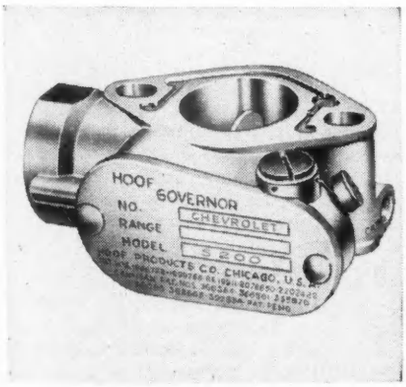
by JOSEPH GESCHELIN
CCJ Detroit Technical Editor

tem, combinations with a carburetor, mechanically-driven, and velocity and suction types.

The market now offers a variety of units that make it possible for the operator to select the type and make of governor suitable to his equipment, in a range of prices, and provides factory-installed units as well as those that can be put on in his own shop. Several makes offer vehicle speed control—rather than engine speed control—the latest being a new type model offered by Pierce.

This brief highspotting is intended to refresh the memory of fleetmen and provide some information regarding the adjustment and servicing of current models.

The Hoof cantilever spring governor is available in two models—the key locking type and the snap or lead seal



Special Features

LET US consider first some of the special features of the makes now on the market, all of which have been described in earlier issues of CCJ.

Hoof Products Co., cantilever spring governors take advantage of manifold vacuum and the velocity of gases and are controlled by suitable governor diaphragm action as well as a connection to the spark control diaphragm. In recent models they have been made smaller in size and more compact to eliminate installation interferences. Moreover, they are now of full range type, that is, capable of adjustment for a wide range of operating conditions.

King-Seeley Corp. makes two basic types—the Handy velocity and the Vari-Speed velocity governors; and the new K-S hydraulic governor recently announced. Both Handy models feature an anti-cheat piston to provide the additional closing force required to position the throttle plate in vertical position, and a spark transfer arrangement to provide a further means of accurate control. The hydraulic governor is designed for more precise regulation at the lowest possible price. The master unit can be driven from any convenient point on the engine while the slave unit—suitable for mounting on the separate sandwich type throttle body or attached directly to the carburetor—is connected with the master unit by a tube or pipe.

Klemm Automotive Products Co. governors are of simple, self-contained design suitable for installation between the carburetor and intake manifold and are recommended by the manufacturer for any commercial vehicle installation.

Mallory Electric Corp. features its governor-distributor device in which manifold vacuum is used as a source of power while sensitive control of speed comes from a special piston valve mounted on the distributor shaft. Thus, speed control is employed to meter the force supplied by manifold vacuum.

Zenith Carburetor Division, Bendix Aviation Corp., continues its Gov-U-Retor, a governor which is built as an integral part of the carburetor, operates the governor throttle by means of the forces developed by manifold vacuum and corresponding changes in the velocity of the gases. Usually this unit is sold as original equipment, although installations can be made in the field.

(TURN TO NEXT PAGE, PLEASE)

Governors—A CCJ Round-Up

(Continued from Page 47)

Safety Speed Control Co. makes two types of mechanical governors, both including an auxiliary control from the ignition system. One type, intended for heavy-duty trucks controls engine speed and takes its drive from the generator. The other, designed for taxicabs and small commercial vehicles, controls vehicle speed only, and takes its drive from the speedometer connection.

The Pierce Governor Co., Inc., is entering the heavy-duty field with a new adaptation of its familiar fly-ball governor intended primarily for vehicle speed control. The drive is taken from the standard speedometer take-off, the speedometer connection to the instrument panel being then made from the head end of the governor. The same governor also can be adapted for engine speed control, on engines which have no provision for mechanical drive, by driving from a special distributor mounting.

Monarch Governor Co. offers two basic types to the fleetman—the centrifugal control (mechanical type) which is belt driven from an engine accessory belt; and the vacuum-velocity type which is available in a number of models.

Governor Data

HAVING in mind the makes and types of governors on the market, the operator is better able to analyze his requirements and then determine the make best suited to his purpose. In this connection it is of value to know something more of the characteristics of the various makes—their adjustment, fool-proofness, maintenance procedure, and specifications for the best application.

According to Zenith, the Gov-U-Retor controls the position of the throttle in the carburetor and thus prevents "cheating." It is claimed to be almost impossible for a driver to ruin the governor since he has control of the throttle only at speeds below the governed speed, and if the governor were to be put out of commission, the carburetor will refuse to answer the foot throttle. Adjustment for speed is internal and can be made only after removing the seal wire and channel plugs. Thus tampering is made difficult and is apparent by the evidence of broken seals.

Adjustment can be made in the shop with a tachometer for measuring engine speed. So far as service is concerned, Zenith recommends dealing with Zenith distributors or service stations equipped with proper tools and instructions. If a field installation is to be made, it is necessary to provide the distributor with the make and model of the engine and the approximate speed at which governing is required.

On Mallory governors the factory has designed standard installations for most of the leading makes of trucks in production. On other jobs it is necessary to advise to as carburetor bore, the make of distributor, its spark curve, and measurements of shank and shaft.

The governor requires three kinds of adjustment, but only one of these can be done in the field, namely the selection of engine speed by turning the adjusting screw on the distributor head shaft. This can be done in the shop, using a tachometer; or it can be done on the road. According to the factory, this governor is jam-proof, tamper-proof, and will not break at excessive speed. It cannot be serviced by the operator, and requires careful handling on the part of properly instructed mechanics.

Klemm governors can be set and adjusted in the shop or on the road, the adjustment being locked by the key or adjusting nut with seal, depending upon the style. After that, when the key has been removed or the adjusting nut sealed, the governor becomes tamper-proof and cannot be broken by excessive speed. Klemm does not encourage servicing by the operator, prefers to have the units returned to the factory for service and replacements. In ordering governors the only information required is the make and year of the vehicle, number of cylinders and horsepower of the engine.

King-Seeley requires the following information in ordering Handy governors—make and model or year of the vehicle, number of cylinders, displacement, carburetor size and whether the carburetor is up- or down-draft, and the "no-load" speed desired. The hydraulic governor is supplied only as original equipment and is not sold as an accessory or for the after-market. They can be set for speed by the use of a tachometer, preferably of electric type, hooked into the electrical system after the engine has been warmed up.

If a velocity governor is new and has been obtained from a regular distributor, it will have been preset on a special calibrating fixture. Final adjustment for speed is by means of an adjusting screw.

Although K-S believes that any governor can be tampered with, if the driver is sufficiently persistent, every precaution has been taken to supply sealing means which make it difficult to tamper with. Neither the hydraulic nor the velocity governor can be damaged by excessive speed.

So far as service is concerned, K-S recommends that governors be returned to a K-S distributor or to the factory. On the hydraulic unit the service problem is more simple since the master and slave units are standard and have interchangeable parts. These parts will be made available through regular distributors. Both the Handy and Handy Vari-Speed governors are provided with design features precluding "cheating" by the driver.

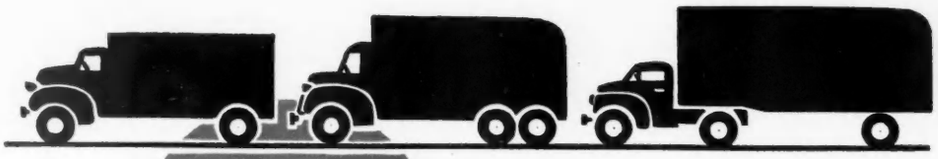
When ordering Hoof governors, it is necessary to give the make and model and year of the vehicle. With the full range governor it is not necessary to mention the governed

(TURN TO PAGE 124, PLEASE)

CLIP AND SAVE

This article is the first of a series that will outline in detail eight vital steps every fleet operator should take in the selection of exactly the right truck for the hauling job it must do in his fleet. The eight steps deal with basic factors that will not change with time or truck styling.

It will pay you to clip and save this and the other articles in this series for your reference file. Together, these articles will make a very valuable handbook on the correct selection and application of trucks.



CORRECT Application of Motor Trucks

Eight vital steps in the selection of the right vehicle for specific service requirements and economical operation

Copyright 1947, The White Motor Company, Cleveland, Ohio

STEP 1 . . Analyzing Operating Requirements

Type of operation, materials to be hauled, operating conditions, state vehicle limitations, and performance requirements are few of the many factors that must be definitely known

APPLICATION OF TRUCKS through the years has always been an attempt to fit the truck to the job. Manufacturers have always published specifications on their trucks, and many operators have known their trucking needs. Still, all too frequently the result has been a loose fit between truck and job. Transportation authorities cite a number of reasons. The main fault seems to stem back to the kind of analysis the operator makes of the job he expects the truck to do. Vague information about the work required of the truck can only beget vague and indefinite truck application. Later, in operation, this kind of application becomes definite. It shows up in bold letters on the gasoline bills and repair bills, and spreads over into many costs of operation.

An application is correct when the truck fits the work it is expected to do. Logically then, correct application should begin by finding out exactly what this work is. Making a careful and complete analysis of the truck requirements of the operation is laying the cornerstone of correct application. Each of the eight steps of correct application builds on this foundation. Step by step, the selection of each of the units of the truck is supported by the analysis of the trucking operation. The final result is a complete truck, molded in every detail to the requirements of the job. Such a truck will provide the satisfactory performance and economical operation which the quality motor trucks of today are capable of turning out. That is the objective of correct application. First step in that direction is to get the information about the job. But before the information can be obtained, the operator should know what information is required.

Which facts about the operation are pertinent to truck application? For many years there was no definite answer. Into the space left by the lack of authoritative doctrine were piled opinions and guesses on the subject. Some said reams of engineering data had to be collected. Others squeezed the answer into a simple rule. Recently several transportation engineers got together with transportation research men and a group of truck operators, and began to study the problem seriously. One of the results of that study came out as a form called *Truck Requirement Analysis*, shown on the following page. With this form, the operator has a definite guide to the information that should be obtained as the first step in correct application.

The Truck Requirement Analysis Form

THE *Truck Requirement Analysis* form is an outline of the principal information needed for truck application. [A specimen of this form will be found reproduced on Page 3.—Ed.] Analyzing the job is now a matter of substituting information for the blank spaces on the form. By completing the form, the operator has a fund of facts about his job, neatly assembled and classified. Each of the steps in correct application draws from this fund. As the units are being selected, the basis is always the requirements of the trucking operation as described by the form. After the component units and specifications are selected following an analysis of the work that is to be done, the information can be listed on the bottom half of the form under *Truck Application Recommendation*. The total of all the facts under the recommendation is a truck fitted with reasonable accuracy to the work it is expected to do.

So at the top part of the form is the trucking job (*Truck Requirement Analysis*), and at the bottom part of the form is the truck to do the job (*Truck Application Recommendation*). Bridging the two halves of the form in a strong arch is the method of correct application. By this method the operator takes the requirements of the job and selects each unit of the truck to match. That is the scope of the seven steps that follow this step.

A good jumping-off point for the entire discussion of correct application is the *Truck Requirement Analysis* form. In the remaining pages of this step, each of the items on the form will be examined carefully, turned over, and the reasons behind each point exposed. The lay-out of the form classifies the information under main headings, with the details of each to be filled in either beside the subheadings, or under the space for comments. Obviously, the information required for analysis is not exactly the same for all operations. The *comments* under each item are space allowed so that different kinds of data to cover the problems of various operations can be listed. This will be seen in going through the following pages. The top few headings on the analysis form—*name of company or owner*, etc.—may be passed over, down to the first main heading, *type of operation.*

Type of Operation

UNDER the first main heading on the *Truck Requirement Analysis* form, the two terms *intercity* and *city or suburban*, hardly need an explanation. If an operation can be classified as strictly one or the other, a check is sufficient. When a trucking operation straddles the two, and the equipment normally used on intercity work is required to do city-type work, then some note should be made under *comments* about the percentage of such city-type work. *Off-the-highway* refers to dump trucks in excavation work, or trucks in mine and quarry work, as well as trucks used on special projects inside large plants. The operating conditions for such trucks are often special. Any unusual conditions about the type of operation should be noted in the comments.

This space for comments should be used also to fill in several other facts. Facts about traffic—whether light or heavy—should be noted. Facts about the frequency of stops, or total number of stops for city-type operations. An estimate of the amount of time the driver spends loading or unloading, or transacting business should be recorded in *comments.*

All of these facts have a bearing on the power requirements of the truck needed for the job. In Step 2, *How to Calculate Engine Horsepower Requirements*, this information will be used in determining the correct standard of performance the truck should maintain.

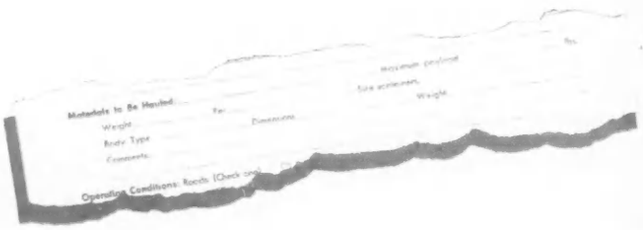
Materials to Be Hauled

THE material the truck will haul—whether sand, gravel, general freight, produce, gasoline, oil, etc.—is basic information for application. Under *weight*, the pounds *per* cubic yard, or *per* gallon, or *per* case, etc., should be recorded. Also list the *size containers*—the height and width or diameter when boxes, barrels, cans, etc., are the cargo of the truck. This information is needed to figure out the size of the truck body, if the size is not already established.

Three additional facts about the body are required: *Type, dimensions*, and *weight.* The dimensions may have to be figured from the information on size of the load. Knowing the size of body and the type, the weight may be obtained from the body manufacturer's specifications. If the body has not previously been built, the weight will have to be estimated. (Consult body manufacturer.)

In the comments a note should be made of any special streamlining, such as a tapered rear end. Also, any factors opposed to streamlining should be noted. Both of these conditions apply only to high-speed operations of 50 m.p.h., or more. The normal trailer of today is somewhat streamlined. Usually the front end is either round or oval and the sides are fairly smooth.

In the space beside *maximum payload .... lbs.* should be inserted the weight the operator agrees will be considered the maximum load which he authorizes dispatchers and drivers to carry on the truck. By adding this maximum payload weight to the weight of the truck body and chassis, the gross vehicle weight of the truck can be established. This gross vehicle weight (more often referred to as g.v.w.) will be used later in calculating the power the truck requires, and in selecting the correct model truck



(Step 3). Tonnage ratings, sometimes associated with the choice of truck models, are not satisfactory to use for accurate figuring. Useful only for insurance, licensing, and other such purposes, these ratings do not indicate in any way the true capacity of the truck.

Additional facts about the weights of the truck body and payload are vital to application. For example, the way maximum payload is established and regulated will have some part in determining the gross vehicle weight. In operations where different materials are hauled, such as general freight hauled by common carriers, it would be possible to severely overload the truck unless the owner establishes a load limit which the dispatchers and drivers are not to exceed. If the limit is set and enforced, this should be noted under *comments.* If no such enforcement is apparent, this should be noted under *comments*, so that some allowance may be made when application is being worked out.

Under *comments* also should be noted whether or not state laws on load play a part in the operation, for in some cases, instead of the truck being required to carry a predetermined payload, the operator will want to put on all that is legally permitted. Then the maximum gross vehicle weight will be determined by state or municipal regulations. In the comments should be noted whether or not the law is a limiting factor on gross weight.

Form No. 21

TRUCK REQUIREMENT ANALYSIS

Name of company or owner_____

Address_____ **City**_____

Type of business_____ **Location (where truck used)**_____

Type of Operation: (Check one) ☐ Intercity ☐ City or suburban ☐ Off-the-highway

Comments:_____

_____

Materials to Be Hauled:_____ Maximum payload_____ lbs.

Weight_____ Per_____ Size containers_____

Body: Type_____ Dimensions_____ Weight_____

Comments:_____

_____

Operating Conditions: Roads: (Check one) ☐ Paved ☐ Unimproved

Terrain: (Check one) ☐ Level ☐ Rolling ☐ Mountainous Maximum grade _____%

Comments:_____

_____

Hauling Conditions: Daily mileage_____ Hours operated daily_____ Loaded both ways_____

Payload: (Check one) ☐ Fixed maximum load ☐ Variable load ☐ Diminishing load

Comments:_____

_____

States in which Vehicle Will Operate: Licensed in_____

Operated in_____

Performance Requirements: Maximum operating speed on level roads_____ miles per hour

Schedule requirements_____

Comments:_____

Company_____

Date_____ By_____
(Signature)

TRUCK APPLICATION RECOMMENDATION

Truck or Tractor: Make_____ Model_____ Wheelbase_____ Tire size_____

Approved gross vehicle weight_____

Load distribution, total GVW: Front_____ lbs._____% Rear_____ lbs._____%

Engine: Model_____ Brake horsepower_____ at_____ r.p.m.

Performance: Maximum road speed_____ miles per hour

Ability (full load): Negotiate a_____% grade at_____ miles per hour

Transmission: Model_____ Number forward speeds_____ Direct in_____ Aux. trans._____

Rear Axle: Model_____ Type_____ Ratio_____

Brakes: Type_____

Electrical Equipment: Generator: Volts_____ Amp._____ Battery: Volts_____ Amp. hr. cap._____ No. plates_____

Other Equipment:_____

_____

Company_____

Date_____ _____ _____
Manager Salesman

Copyright 1946, The White Motor Company, Cleveland, Ohio
(Continuing Control System of Truck Management) Printed in U.S.A.

Operating Conditions

THE type of roads the truck will travel over is of obvious importance to truck application. Information about the roads filled in on the analysis form will be used as a factor both in figuring the amount of power required for the truck in Step 2 (*How to Calculate Engine Horsepower Requirements*) and in picking the right size chassis in Step 3 (*Determining Wheelbase and Chassis Model Size*).

Paved roads refer to hard-surfaced improved highways or streets in fairly good or normal condition, even though they may be

somewhat rough in places. If it is known that the truck will travel over much very rough pavement with chuckholes and ruts, this should be mentioned in the comments. Also in the comments it should be indicated if considerable operation in snow and ice will be encountered. Snow and ice on the highways and streets increase road resistance and shock loads, which is a factor in application.

If the road condition is checked as *unimproved*, there should be some further explanation included under *comments* to describe more completely just what is meant. The classification *unimproved* includes dirt roads which are quite rough and soft, or are graded, smooth, and firm. It includes rough trails in oil field work and logging work, and also quarry and mine floors the truck must drive over to get in position for loading from a power shovel. Under *comments* the condition of the quarry and mine floors at the shovel should be noted—whether quite rugged, or smooth and well-maintained. Soft ground, deep sand, or wet clay belong in the *unimproved* road category. Dump trucks and construction trucks, such as concrete mixers, do a lot of work over this type of road. Some trucks in construction work may be normally used on paved roads, but may travel off the highway on unimproved roads occasionally. An estimated percentage of time spent on unimproved roads should be noted. If any of these conditions exist, they should be described under the space for comments.

The *terrain* of the truck route is necessary information for calculating the power requirements in Step 2, and the transmission requirements in Step 7 (*Selecting the Correct Transmission*). In addition to checking off on the form the condition of the terrain—whether *level, rolling, or mountainous*—it is necessary to estimate the percentage of the total mileage that the truck will be traveling uphill when loaded. Under *maximum grade ... per cent* only fairly long grades—such as approximately 1500 ft. (0.3 mile) or longer for intercity-type service, and 500 ft. (0.1 mile) or longer for city or suburban service—should be considered. Short, steep pitches such as approaches to bridges or viaducts should be ignored unless they happen to be extreme (over 12 per cent). These extreme cases should be noted, together with all other conditions which seem likely to be of value in application, under the space for comments.

Information on the per cent grade can be determined in several ways. Grade per cent is the rise in feet for each 100 ft. of horizontal distance. For example, if the difference in elevation between the bottom of the hill and the top is known to be 50 ft., and the horizontal distance from the bottom to the top is one-half mile (2640 ft.), then the grade is:

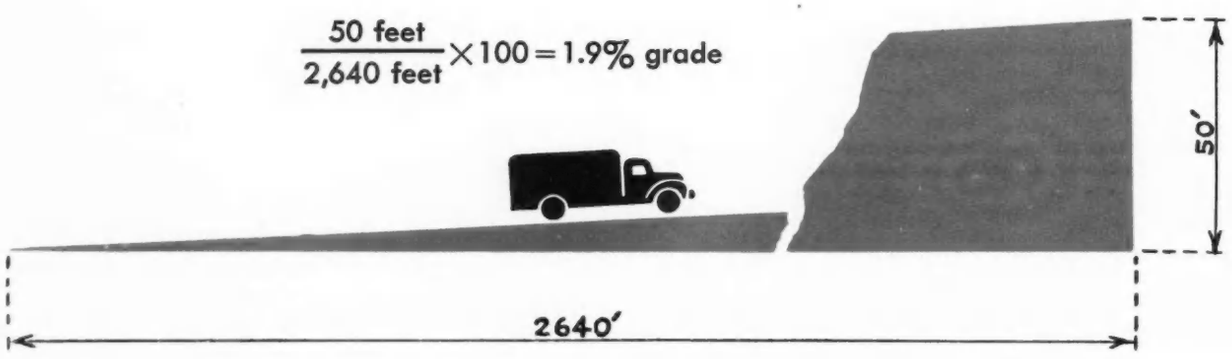
The grades may be determined in several other ways if the information is not readily at hand. In some cases, grades for certain roads or hills may be obtained from the state highway engineers' office. At times it may be more convenient to go over the actual road and measure the grades with an instrument known as a *gradometer*. Under *comments* on the analysis form should be recorded as much detail about the grades as can be found.

Also in the comments under *operating conditions*, the altitude should be noted if the truck or tractor is going to do considerable work in the neighborhood of 5000 ft. or higher (generally in the western mountain region). The lower air pressure at these altitudes affects the power output of the engine. It becomes necessary to raise the compression ratio for engines to be used in such applications. The amount of increase will depend on the altitudes at which the truck is to operate. Therefore, the average and the maximum altitude should be specified.

When trucks are to operate in altitudes of 5000 ft. or higher, necessary specifications should be obtained from the truck manufacturer's engineering department as to the changes necessary to correct for this altitude.

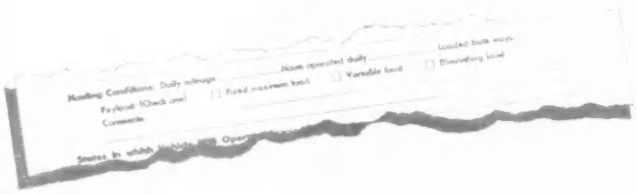
Hauling Conditions

FILLING in the information beside *daily mileage* and *hours operated daily* gives more of the facts needed for determining the performance requirements in Step 2, for these figures are an indication of the average speed required to do the work.



Whether or not the truck is *loaded both ways* will have something to do with the kind of transmission selected in Step 7. If the truck is not loaded both ways, but is partly loaded on return trips, the extent of part loading should be noted in the comments space on the form.

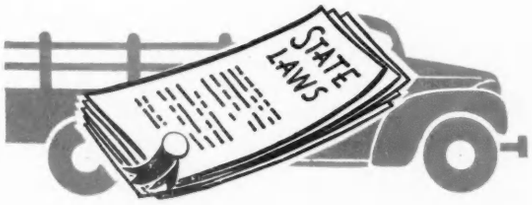
Which of the three types of payload—*fixed maximum load*, *variable load*, or *diminishing load*—will the truck be required to carry? *Fixed load* is a load which is limited by the fact that



the body is designed to haul a fixed amount of only one certain material. The maximum load cannot be greater than the quantity of this material that fills the body. This applies to tank trucks hauling a specified liquid, or to dump bodies hauling a specified material such as coal (designed so that side boards cannot be used), and to special closed bodies hauling cement, etc. Special bottler's bodies to carry a definite number of cases in shelves or tiers, come in this class if they are so designed that the top deck or roof cannot be loaded with extra cases. This physical limitation of fixed load is in contrast to the limitation of load by the operator's rules in his own organization and by state laws on gross weight or payload. Limitation on load by the operator's rules or state laws are not considered as fixed, but only as normal maximum load. An error may occur or an emergency may arise and the truck will be loaded down with more weight than the regulations usually permit. If this can occur, then the payload cannot be classified as *fixed load* since it is no longer within the definition. *Fixed maximum load* means the body of the truck is so designed that it can haul only a fixed amount of one certain material. These differences deserve this special emphasis since the classification of payload has a bearing on the truck rating very important to satisfactory performance and economical operation.

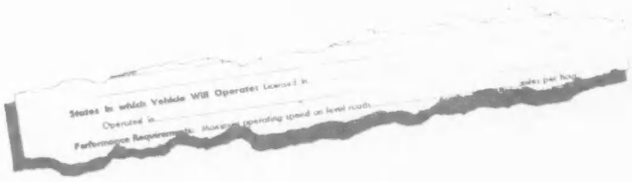
If the operation fits in the *variable loading* class, the space under *comments* should be used to describe the conditions more fully. In some types of variable loading the trucks go out almost every trip carrying their maximum capacity load, but they return either empty or loaded. This return part of the trip puts the operation in the variable-loaded class. Also many operations have occasional high peak loads. Other trucks used in cartage or delivery run a wide variation in payload. The maximum allowable payload may be carried on a truck two or three times a week regularly, while the rest of the times the loads may range down to a third or less than a fourth of the maximum. These are widely variable loads, one of the factors evaluated in considering the size of the truck in Step 3. Therefore, such requirements should be explained on the form under *comments*.

Diminishing loads on the form refers to rapidly diminishing loads, where the truck travels regularly only a comparatively small part of its run before discharging a large part of its cargo. Diminishing loads are a condition which enter into the calculations on the truck capacity rating, Step 3.

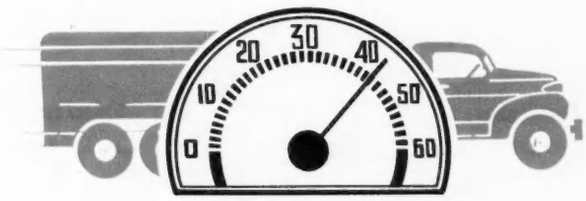


State Restrictions

AN APPLICATION cannot be considered correct unless the legal restrictions on size and weight, as well as the speed limits, have been taken into account for those states in which the equipment will operate. The analysis form should record those states in which the equipment will be licensed. Some states have

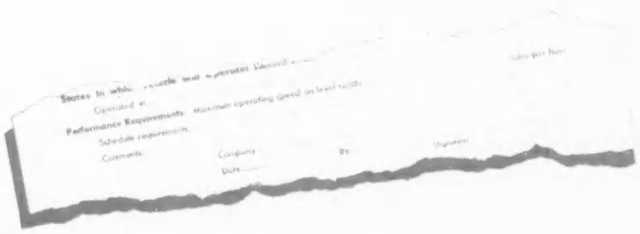


one set of restrictions for vehicles licensed in the state, and another set for units running through the state under reciprocity laws.



Performance Requirements

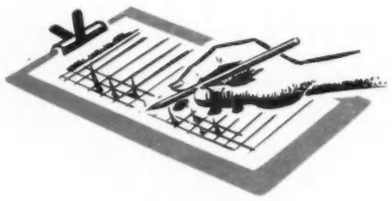
IN THE case of city-type operation, the *maximum operating speed on level roads* means the maximum road speed desired for the loaded truck at the governed engine speed. This operating maximum road speed desired has a direct bearing on the accelerating ability, which is part of the performance requirement to be considered later in the step on engines. Any special *schedule requirements* for city- or suburban-type operation should



be noted on the form. For example, deliveries are sometimes required to be at a certain point at a certain time of day. This requires a definite average speed between two points—and a truck correctly applied so the engine has the power to provide this speed (Step 2).

For intercity-type operation, the term *maximum operating speed on level roads* has a slightly different meaning. In this space should be put down the speed the operator wants his drivers to be able to maintain regularly on level roads with full load. This speed on the level must be maintained by the power of the engine against road resistance and normally light head winds. It should not be confused with the higher speed that may be obtained on short stretches of level road after rolling the truck downhill. The required maximum operating speed in level or rolling country is generally about 10 m.p.h. greater than the average speed which is calculated strictly from the *schedule requirements* alone. In very hilly and mountainous country, higher maximum operating speed ability may be required to maintain schedules. The exact schedule requirements should be listed on the form in terms of the time which must be maintained between the two cities. From this time figure, the average speed needed for the total run can

be calculated. The state speed laws should be considered as they will limit the road speed in some cases. Maximum operating speed in all cases should be arrived at carefully and conservatively because it has a large effect on the fuel economy and truck schedule time, which are part of the engine selection (Step 2) and the axle ratio selection (Step 6).



Summarizing the Method for Analysis

LOOKING at the headings on the *Truck Requirement Analysis* form, it is apparent that here is the framework of correct application. The items on the form are the frame around which each unit of the truck is built. The more accurate and complete the information about the requirements of the truck, the stronger the frame. With that picture in mind, the first step in correct application is going out and getting the data about the work the truck is expected to do.

Just where the facts to fill in the form can be obtained varies with the way different business firms are organized. In some cases the owner himself will have all the facts at hand. In others the purchasing agent may determine the trucking requirements. Usually, no one person will have a finger in all the different sections of a trucking operation. The best man for information about the hauling conditions may be the truck dispatcher. A superintendent of maintenance may have some facts on operating conditions. Getting more data may require going out and riding over the route. Studying the loading and unloading conditions at the dock may throw some light on truck needs.

With the truck requirement analysis completed, the operator now has an outline of the principal information that is needed for selecting the units of the truck. This analysis is the first step in fitting the truck to the job—a large, broad step which must carry much of the weight of the following steps. In the other seven steps, all kinds of questions will be fired at the analysis. If accurately and completely filled out, the analysis form should be able to hand back the answers. The method for accurate and complete analysis is to get the information, as summarized here:

★ 1. Type of Operation

The trucking operations that are either city type or intercity type merely should be checked in the proper space on the form. Operations which include both types of service should list the percentage of city-type work. Off-the-highway operations should be described in detail. Traffic conditions, frequency of stops, total number of stops, and an estimate of the time the driver spends loading and unloading are some other facts to be recorded.

★ 2. Materials to Be Hauled

The material, the weight per unit, and the dimensions per unit should be entered on the analysis form. Data on the truck body is required—the type, dimensions, and weight. In operations where the speeds are over 50 m.p.h., any factors in favor of body streamlining or opposed to streamlining, should be noted. The maximum payload figure the truck will be required to haul should be recorded on the form. Whether the law is a limiting factor on gross weight should also be noted.

★ 3. Operating Conditions

If roads are paved, note whether there are stretches of rough pavement, and whether there is much ice and snow. If roads are unimproved, describe them in detail. Estimate the percentage of time on unimproved roads, if the truck uses both types of terrain, plus an estimate of the percentage of time the truck will travel uphill when loaded. Maximum long grade includes those 500 ft. long (city service), or 1500 ft. long (intercity service). Note grades over 12 per cent.

★ 4. Hauling Conditions

Assemble the facts on daily mileage and hours the truck operates. If the truck returns partly loaded on return trip, note the extent of part loading. List the type of payload on the form—whether fixed, variable, or diminishing.

★ 5. State Restrictions

Record the legal restrictions on size and weight, and the speed limits. Note the states in which the truck will be licensed, and those in which the truck will be operating.

★ 6. Performance Requirements

Record the maximum road speed on level roads. In city operation this is the maximum road speed for loaded truck at governed engine speed. In intercity operation this is the speed the truck must constantly maintain over the road. Enter schedule requirement on the form.

Next Month: Step 2

"How to Calculate Engine Horsepower Requirements"

Up to this point all information about the job that a particular truck is expected to do has been acquired and noted in detail on the Truck Requirement Analysis form.

From this point, the remaining steps will show how the above requirements can best be met. Next month, for example, COMMERCIAL CAR JOURNAL will publish Part 1 of Step 2 on "How to Calculate Engine Horsepower Requirements."

The remaining steps are:

STEP 3. Determining Wheelbase and Chassis Model Size.

STEP 4. Selection of Correct Size and Type of Tires.

STEP 5. Determining correct Type and Capacity of Rear Axle.

STEP 6. How to Determine the Correct Rear-Axle Ratio.

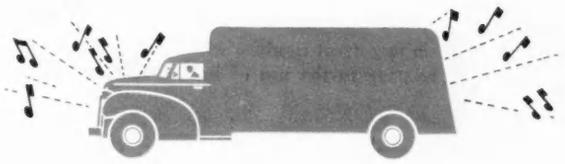
STEP 7. Selecting the Correct Transmission.

STEP 8. How to Select Other Equipment.

Each of these steps will be presented fully in successive issues of COMMERCIAL CAR JOURNAL.

FLEET OPERATORS' EXPERIENCE HANDBOOK

Fleets Get Good Results from TUNE-UP OILS



Many specific benefits are reported by CCJ's Board of Experts, most of whom use one or both types to correct specific troubles

Analysis ***by A. W. GREENE,*** *Managing Editor, Commercial Car Journal*

Types of Tune-up Oils Used by Fleets and Frequency of Use

68% of fleets report using tune-up oils. 25.68% use crankcase type; 22.07% use gas tank additive; 20.72% use both

74.68% use one or both occasionally; 25.32% use them regularly

Tables 1 & 2A

Vocation	Total Number Fleets Reporting	Crankcase Type Per Cent Using	Gas Tank Type Per Cent Using	Both Per Cent Using	Total Using Per Cent	Non-users Per Cent
COMMON CARRIER GROUP						
Local and Over-the-Road	40	27.50	15.00	30.00	72.50	27.50
FOOD DISTRIBUTION GROUP						
Bakeries, Dairies, Meats and other Food Products	45	20.00	35.55	17.78	73.33	26.67
GOVERNMENT GROUP						
State, County, Municipal, Federal	54	30.91	14.55	18.18	63.64	36.36
CONSTRUCTION						
Builders, Quarries, Gravel	6	50.00	.....	33.33	83.33	16.67
INDUSTRIAL						
Local and Over-the-Road	2	.....	.....	100.00	.....	.....
PETROLEUM GROUP						
Private Carriers	9	22.22	11.11	11.11	44.44	55.56
PUBLIC UTILITY GROUP						
Gas, Power and Water	34	26.47	23.53	20.59	70.59	29.41
RETAIL DELIVERY GROUP						
Other than Food, Dry Cleaning, Laundry, Newspaper, Coal and Ice, Department Stores, Beverage	18	27.78	33.33	16.67	77.78	22.22
TRUCK RENTAL	5	40.00	.....	.....	40.00	60.00
TRUCK and Bus Fleets, Mixed	9	.....	44.45	11.10	55.55	44.45
TOTALS AND AVERAGE	222	25.68	22.07	20.72	68.47	31.53

2A

Vocation	Total Number Fleets Reporting Use	Crankcase Type: Regularly Per Cent	Crankcase Type: Occasionally Per Cent	Gas Tank Type: Regularly Per Cent	Gas Tank Type: Occasionally Per Cent	Both: Regularly Per Cent	Both: Occasionally Per Cent
COMMON CARRIER GROUP							
Local and Over-the-Road	29	17.24	20.69	6.90	13.79	17.24	24.14
FOOD DISTRIBUTION GROUP							
Bakeries, Dairies, Meats and other Food Products	33	3.03	24.24	24.24	24.24	9.10	15.15
GOVERNMENT GROUP							
State, County, Municipal, Federal	36	5.56	44.44	.....	22.22	13.89	13.89
CONSTRUCTION							
Builders, Quarries, Gravel	5	.....	60.00	.....	.....	.....	40.00
INDUSTRIAL							
Local and Over-the-Road	2	.....	.....	.....	.....	.....	100.00
PETROLEUM GROUP							
Private Carriers	4	.....	50.00	.....	25.00	.....	25.00
PUBLIC UTILITY GROUP							
Gas, Power and Water	24	.....	37.50	12.50	20.83	.....	29.17
RETAIL DELIVERY GROUP							
Other than Food, Dry Cleaning, Laundry, Newspaper, Coal and Ice, Department Stores, Beverage	14	7.14	28.58	7.14	35.72	7.14	14.28
TRUCK RENTAL	2	.....	100.00	.....	.....	.....	.....
TRUCK and Bus Fleets, Mixed	5	.....	.....	40.00	40.00	.....	20.00
TOTALS AND AVERAGE	154	5.84	32.47	10.39	21.43	9.09	20.78

Tables 1 & 2A. While tune-up oils appear to be used more on an occasional than on a regular basis, even the fleets reporting occasional use seem to use the additives with some degree of regularity. For details see Table 2B

OVER 68 PER CENT of the nation's fleets use one or both types of the tune-up oils available on the market, COMMERCIAL CAR JOURNAL's Board of Experts found in the latest survey compiled for the Fleet Operators' Experience Handbook. The users are divided into three groups: Those who use only the crankcase type (25.68%), those who use only the upper cylinder or gas tank type (22.07%), and those who use both (20.72%). A vocational breakdown of these users will be found in Table 1. The table also shows that 31.53 per cent of all fleets reporting did not use any type of oil.

When asked if they use these products regularly or occasionally, 25.32 per cent reported regular use of either or both types. The

. . . Tune-up Oils

(Continued from Page 55)

majority, 74.68 per cent, stated that they used tune-up oils occasionally. This fact is shown in Table 2A, which breaks down the data according to types of tune-up oils and fleet vocations.

Just what constitutes regular use and occasional use can be determined by a study of Table 2B. To many fleetmen regular use means continuous use and to others it means use at regular periods. Thus, some fleetmen, say they use a crankcase additive regularly when they use it at 10,000-mile intervals, and others use it regularly at every oil drain. Of course, inasmuch as both fleetmen use the product at *regularly scheduled intervals*, both are technically correct. On the other hand, a number of fleetmen who use the same type of product at, say, 4000-mile intervals—probably also a regularly scheduled period—placed themselves on record as being but occasional users. The same is true of many fleets who use additives only during one season—winter, for example.

In all probability, those who use tune-up oils regularly use them to prevent trouble, and those who use them occasionally, use them to correct troubles when they occur. A summary of all the circumstances relating to the use of both types of tune-up oils is given in Table 2B.

The most interesting data obtained from the Board of Experts relative to the use of tune-up oils are the benefits claimed for the use of these products. Table 3A shows that 87.40 per cent claimed elimination of valve sticking as the major benefit, 63.78 per cent stated tune-up oils eliminated piston ring sticking, 33.80 per cent said sludge formation was retarded, 26.77 per cent found improved gas economy and 25.20 per cent gained improved oil economy. The average fleet reporting these benefits gave three of those listed in the table.

On the other hand, about 17 per cent of the fleets reporting use of tune-up oils, listed no particular benefits—probably because they had no proof of results or used them for too short a period to obtain specific data.

Other benefits which fleets attribute to the use of tune-up oils are listed in Table 3B. It should be noted that there appear a few variations of the principal benefits contained in Table 3A. One case is the statement "Retards valve sticking." Another is, "Retards ring sticking." This is a fine differentiation from those who reported "Eliminates valve sticking" and "Eliminates ring sticking."

These data should encourage those using these products "on faith" and provide food for thought for fleets who have not tried tune-up oils.

Benefits Fleets Trace to Tune-up Oils

127 of 154 fleets using additives report benefits. 87% say valve sticking eliminated, 63% say ring sticking corrected

Table 3A

Vocation	Total Number Fleets Reporting	Eliminates Valve Sticking	Eliminates Ring Sticking	Retards Sludge Formation	Improves Gas Economy	Improves Oil Economy
		Per Cent of Fleet Reporting	Per Cent of Fleet Reporting	Per Cent of Fleet Reporting	Per Cent of Fleet Reporting	Per Cent of Fleet Reporting
COMMON CARRIER GROUP						
Local and Over-the-Road	25	88.00	68.00	28.00	32.00	40.00
FOOD DISTRIBUTION GROUP						
Bakeries, Dairies, Meats and other Food Products	25	80.00	56.00	28.00	36.00	28.00
GOVERNMENT GROUP						
State, County, Municipal, Federal	30	100.00	73.33	46.67	23.33	26.67
CONSTRUCTION						
Builders, Quarries, Gravel	5	100.00	80.00	60.00	20.00	20.00
INDUSTRIAL						
Local and Over-the-Road	2	100.00	.....	.....	.....	.....
PETROLEUM GROUP						
Private Carriers	2	100.00	100.00	50.00	50.00	.....
PUBLIC UTILITY GROUP						
Gas, Power and Water	21	90.48	52.38	28.57	19.05	9.52
RETAIL DELIVERY GROUP						
Other than Food, Dry Cleaning, Laundry, Newspaper, Coal and Ice, Department Stores, Beverage	12	75.00	66.67	33.33	25.00	33.33
TRUCK RENTAL	2	50.00	50.00	.....	.....	.....
TRUCK AND BUS FLEETS, Mixed	3	33.33	66.67	33.33	33.33	33.33
TOTAL AND AVERAGE	127	87.40	63.78	33.86	26.77	25.20

Table 3A. Principal benefits claimed by fleets who use tune-up oils, crankcase and upper cylinder types. For others see Table 3B, at right

Uses for and Reasons Why Fleets Use Tune-up Oils

Table 2B

CRANKCASE ADDITIVE (Regularly)

Added to oil on changes and additions.
In rebuilt engines.
Every 10,000 miles.
On overhaul jobs and every 8000-mile tune-up.
Every 5000 miles.
On first and fifteenth of every month in diesels only.
On every overhaul and tune-up.
Every oil drain.

CRANKCASE ADDITIVE (Occasionally)

Running-in overhauled engines and general engine tune-up.
If valves are sticking.
When trouble develops and at time of oil change.
When analyzer shows engine is developing sticking piston rings or valves.
For Winter operation.
When condition of engine warrants use.
Once every three or four oil changes.
To help correct sludged engine condition.
Every 3000-4000 miles.
When engine starts losing power.
Only during extreme cold weather.
When engines have been idle or not used frequently.
When engines use oil excessively; we also inject it directly in the cylinders.
In cold weather, to make starting easier.
When engine starts getting sluggish and we don't have time to work on it.
On all new engines and rebuilt engines for the first 1000 miles only.
To help remove some sludge from oil pump screen.
In new and overhauled motors.

GAS TANK ADDITIVE (Regularly)

Every three months, at inspection time, or if engine shows poor power. Also, we find it a good habit to run about ½ pt of tune-up oil through the intake manifo'd to free-up valves; have not had a burned valve in 18 months.
Added to main tanks on receipt of every load of gasoline.
Tune-up every two months.
We use 1 pt every 500 miles, injected with a top cylinder oiler.
Every 1000 miles.
We use 8 oz to every 10 gal of gasoline.
Each 2500 miles.
Every two months on vehicles not gassed in company yards.
Injected through carburetor at time of scheduled inspection—every three months.

GAS TANK ADDITIVE (Occasionally)

If valves are sluggish, and for other sluggish conditions.
When recommended by our oil testing laboratory.
If needed at tune-up periods.
When slight loss in compression is noted.
When we break-in rebuilt engines.
Mostly to free-up valves.
Only on tune-up jobs, and then only through carburetor.
Use in Winter only.
Only in new engines.
For sticky valves and on re-ring jobs.
On overhauls and re-ring jobs; also on new engines.
On jobs having sticky valves, we use a gas additive about once a week.
When rings show signs of plugging.

BOTH (Regularly)

Once a month.
Gas additive inserted to underground gas tanks every filling; crankcase additive in a new or overhauled engine.
Crankcase additive is used on all overhaul jobs, but gas additive is used at all times.
First 3000 miles of every rebuilt engine.
On monthly inspections.
At every oil change.
For running-in engines; gas tank type also added to all gas supply.
Every 5000 miles or six months.
Tank additive used constantly all Summer; crankcase additive three times a year.
Approximately every four months or 5000 miles.
On tune-ups.
On all overhaul jobs.

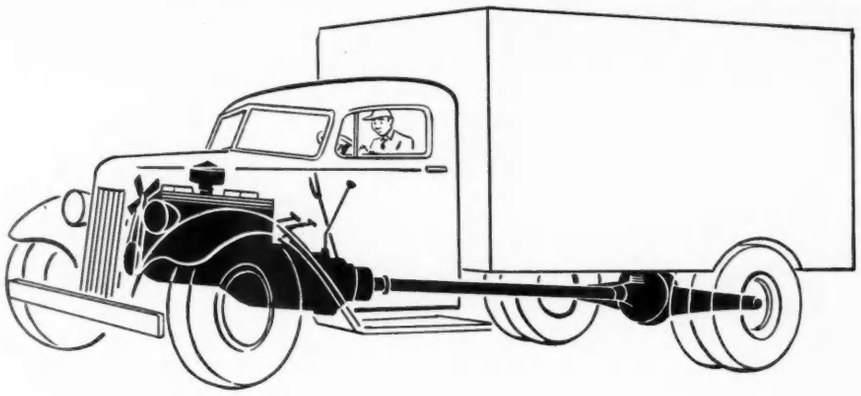
BOTH (Occasionally)

According to condition of individual engines.
When oil consumption is excessive.
Only when engine is sludged-up.
Upon indication of dirty engine prior to overhaul time, also for rebuilt engine showing tightness.
At tune-up time.
On new engines, after engine overhauls, and when an engine becomes sluggish.
On overhauled jobs and jobs with sticky valves.
When breaking-in new rings and bearings on passenger cars.
When reported to be needed by our oil testing laboratory service.
Twice a year—Winter and Spring.
If needed before we get to do a regular tune-up.
Once each three or four oil changes.

Other Benefits Attributed To the Use of Tune-up Oils

Table 3B

Eliminates carbon.
Improves lubrication.
Freer engine operation and lubrication to all points.
Increases compression.
Help keep top ring lands from burning.
Better lubrication to top of piston.
In some cases, extended ring life by 2000 to 3000 miles.
Prevents scored pistons and cylinders on overhaul jobs.
Lessens wear at top of cylinder.
Retards valve sticking.
Retards ring sticking.
Improve engine performance.
Helps eliminate ring sticking.
Better lubrication on re-ring jobs.
Better acceleration.
Easier starting.
Engine stays cooler.
More positive lubrication for first turns of tight engine.
Peps up motor.
Eliminates valve spring breakage.
Eliminates plugged oil screens.
Delays ring sticking.
Easier to tune engines.
Allows tight motor to wear in better.
Helps retard sludge formation.
Prolongs overhaul period.



Power Train Series No. 2

Rear Assemblies

Causes and cures of common premature power train failures in differential, propeller shaft, U-joints, rear axle, suspension system

by ***M. K. SIMKINS***
Technical Editor,
Commercial Car Journal

THE POWER TRAIN trouble shooting article appearing previously outlined the major factors responsible for excessive noises, premature wear, vibration and oil leakage of the transmission. Part II, continuing with a trouble shooting power train failure diagnosis, will treat of such subjects as the differential, universal joints, drive shafts, rear axles and suspension system to complete the units responsible for noise and vibration in the system. The mechanic will consider both parts as a guide to trouble shooting conditions characteristic of these worn assemblies in his checking routine for determining causes of premature failures.

Propeller Shafts

DEFECTIVE propeller shafts are the chief offenders contributing to power train vibration and resultant wear and noise. Moreover, it is extremely hard to spot a drive shaft failure. The rumbling sound accompanying a worn drive shaft is often indistinguishable from transmission and differential troubles. Most troubles can be attributed to incorrect installation or to careless driving habits.

Correct alignment of the universal joints is necessary to proper operation. The parallel alignment of the yoke faces should be correct to within 3 degrees, and even this much leeway may contribute to vibration at high speeds. For correct alignment of the drive shaft assembly, the vertical faces of the flanges must be parallel and at right angles with the centerline of the transmission and the centerline of the rear axle. Manufacturers stamp arrows on the shaft and on the slip yoke to facilitate accurate assembly of the units.

Sprung shafts can be caused by many conditions, the most prominent of which is careless assembly. If the shaft is dropped during the service, it is possible that it may become bent. Use of the wrong type of bolts on the flanges may contribute to an out-of-balance assembly, as can looseness of the flange nut or yoke nut at the rear axle pinion.

Propeller shafts that are too long for the vehicle will cause serious trouble when the male spline end buttons against the female end. If bottoming of the shaft is light, brinelling of the pinion bearings may result. If the shaft is much too long, the drive shaft may spring or even collapse, resulting in damage to the vehicle. Too short a propeller shaft may cause a separation at the slip joint, especially while driving over rough roads or with heavy loads, and serious damage will result.

Truck manufacturers have balanced the component parts of the power train to the r.p.m. commensurate with the operator's hauling needs —but if overdrives are added, gov-

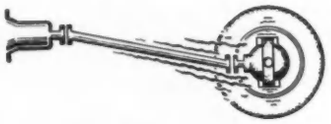
(TURN TO NEXT PAGE, PLEASE)

Rear Assemblies

(Continued from Page 57)

ernors are removed or wheelbases are changed, serious out-of-balance may occur in the power transmitting assembly. For this reason owners should consult engineers before modifying vehicles to suit special requirements.

Proper lubrication is an important item in securing satisfactory propeller shaft life and freedom from vibration and noise. During the service a small amount of oil should be worked into the roller assemblies, and the slip joints should be lubricated with chassis grease.



Universal Joints

EXCESSIVE wear with resultant vibration of the universal joints may be the direct result of erratic driving and braking torque. Excessive strain applied to the universal joints will allow the joints to become cramped, and the splines will bind in the slip joint, thereby placing a direct pull on the thrust washer mounted at each end of the U-joint retainer pin. This end thrust will cause wear, forcing the lock springs out of their respective grooves and permitting the washers to drop off the pin. Breakage will result when the retainer pin has an additional end play of more than 1 inch.

Under overload conditions the springs are sometimes forced into reverse camber so that the sliding members pull apart. The engagement becomes so small that the splines are no longer capable of carrying the torque, and early failure of the splines is the result. This high degree of tilt in the pinion shaft and the universal joint female yoke sometimes causes bending of the unit and eventual breakage of either the yoke or the shaft.

A small amount of looseness in the flange nut or the yoke nut of the pinion shaft is enough to cause excessive out-of-balance at high speeds. Failure to draw this nut up tight may destroy the adjustment of the pinion bearings so that serious damage will result. Another similar condition will be caused by incorrect assembly of the keys in the keyways on the tapered pinion shaft. If the key is too long, the pinion shaft will become misaligned, causing incorrect pinion to ring gear adjustment, bad tooth contact and eventual failure. If the keyway is worn or tapered, the pinion will become loose on the shaft with serious damage resulting.

Most high angle needle bearing universal joints require careful greasing with a hand gun rather than high pressure systems which can easily destroy the cork seals thereby ruining the bearing assembly. It is a grave fault on the part of some lubrication concerns, particularly the small garage, to leave the fittings in high angle needle bearing universal joints. These fittings, of course, interfere with the proper high angle function and in every case should be removed and plugs screwed in in their place so that there will be complete freedom of movement in the universal joint.

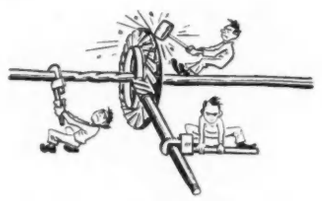
Differential Noises

NOISES arising from the differential are extremely difficult to locate, and many mechanics will hesitate to say whether apparent noises arise in the rear axle, differential, propeller shaft or transmission. However, a certain amount of accuracy can be insured if the noise assumes the following characteristics: noise on a straight ahead pull may be caused by the pinion teeth bottoming in the ring gear, a condition which will require re-adjustment of the gear mesh. If the noise appears on the straight ahead during coasting, it might be attributed to the fact that the pinion teeth are not meshing deep enough in the ring gear. This may be due to maladjustment, wear in the gears or in the bearings, or it may be due to misalignment.

A continuous hum may be caused by loose wheel bearings or pinion bearings. An intermittent hum is possibly caused by the fact that the ring gear does not run true and may be the result of loose or broken differential bearings, a sprung or cracked case, a warped ring gear, foreign material between ring gear and differential case, or the ring gear bolts may have been drawn up unevenly.

If the carrier assembly is noisy on turns, the trouble may be due to tight differential gears on the cross or pinion shaft, or the side gears may be binding in the differential case. It is possibly due to chipped or scuffed side gears or rough case thrust bearings. Excessive backlash between the differential gears and the pinions may account for a similar noise. A noise occurring on turning to the right or to the left may be due to excessive end play at the differential thrust bearing.

Other causes of differential noises may be listed as insufficient lubricant, improper grade of lubricant, improper ring gear and pinion adjustment, worn ring gear or pinion teeth or mismatching of these gears. Loose pinion bearings and worn or loose rear wheel bearings will also produce noises in the differential. And finally, excessive or insufficient ring gear backlash should be considered as a possible cause of excessive rear end noises.



Differential Failures

While differential case breakage is not common, ability to diagnose the cause when it does occur may save a delay. This condition is generally due to maladjustment of the differential support bearings, or it may be due to loose case bolts. Fatigue failure at the base of the hub results from the bending action upon the case caused by the looseness of the bearings or from excessive clearance between the ring gear and thrust block and the back face of the gear. Overloading and a grabbing clutch or an improperly operated clutch are contributing factors to this type of failure.

Loose or sheared bolts in the differential case will allow the halves to wear against each other. The shock loading of the trunnions in reverse and starting will cause breakage of the spider. These bolts should be checked when the assembly is down as they may become stretched without showing evidence of failure.

Scoring and seizure of the differential pinions again is not common, but the condition can develop with insufficient lubrication or the use of wrong types of lubricants. Excessive

spinning of one wheel produces wear of these pinions and also wears the differential and pinion thrust washers. This wear in turn will change the adjustment between gear and pinion, destroy normal gear tooth contact and impose a bending stress into the assembly and make it susceptible to fatigue or shock loading. This condition might be developed with continuous operation over muddy roads or on ice-spotted pavements, but proper and adequate lubrication in most cases will eliminate this type of failure.

Excessive axle housing deflection or misalignment of the axle shafts will sometimes cause side gear breakage at the axle shaft splined section. Side gear or pinion gear tooth breakage is either due to normal fatigue or to severe shock. Fatigue failures of the teeth usually show up in fan-shaped waves over the surface of the teeth. Causes are similar to those outlined for fatigue failures above, and remedial measures should follow suggested steps.

Scuffed, scored or pitted bevel gear teeth may be a result of overloading, inadequate lubrication or the use of an improper grade of lubricant, improper adjustment of ring gear and pinion shaft will show up in thinly worn bevel teeth, in chipped edges of the teeth, or in scoring of the tooth surface.

Ring Gear Failures

Premature failure of the ring gear and pinion may be the result of any of the following conditions: Overloading is probably one of the most important causes, especially if the vehicle encounters severe impact loads, rough roads, and faulty operation under these conditions. Insufficient lubrication is a well-known cause of gear failures, but many operators overlook the possibility of improper *types* of lubricants as a factor in premature failures. The wrong type of lubricant or use of an inferior grade will not provide necessary lubricating qualities or may introduce foreign abrasives into the units.

Another cause of gear and pinion failures is improper mounting and adjustment. It has been estimated that the shop itself is responsible for more differential failures than any other single factor. Mechanics fail to hold gear tooth contact to manufacturers' recommendations—or else try to rely on memory for adjustment data. In some cases adequate instruments are not used or are used incorrectly. For precision adjustment of the differential bearings and gear tooth contact, it is imperative that a dial gage be used. Double checking on final adjustments will eliminate many early unit failures.

Engineers claim that adjustments

(TURN TO NEXT PAGE, PLEASE)

TROUBLE SHOOTER'S CHECK LIST

I. PROPELLER SHAFT

• *Excessive Vibration*

Improper alignment of flanges
Missing bolt in flange
Misaligned, sprung drive shaft
Worn torque tube bushing
Worn needle bearings in cross
Worn splines on shaft or yoke
Too short propeller shaft
Loose U-joint flange nut
Improperly installed key on pinion
Misaligned rear wheels
Shifted rear axle
Sprung frame
Worn rear transmission bearing

• *Excessive Wear*

Careless braking
Excessive end thrust
Overloading the vehicle
Too short shaft
Improper lubrication

II. UNIVERSAL JOINTS

• *Out of Balance*

Excessive wear
Loose flange nut
Worn keyways
Incorrect key installation
Grease fitting interference

• *Breakage*

Erratic driving and braking
High angle drive
Overloading
Weak rear springs
Misaligned drive shaft
Misaligned rear axle

III. DIFFERENTIAL

• *Case Breakage*

Improper adjustment differential support bearings
Loose case bolts
Excessive ring gear and thrust block clearance
Vehicle overloading
Erratic clutch operation

• *Scoring of Pinions*

Insufficient lubrication
Improper grade of lubricant
Excessive spinning of one wheel
Excessive loads

• *Tooth Breakage*

Overloading
Erratic clutch operation
Ice-spotted pavements
Normal fatigue

• *Side Gear Broken at Hub*

Excessive axle housing deflection
Misaligned axle shaft
Worn thrust washers

• *Noisy Operation*

Insufficient lubricant
Improper ring gear and pinion adjustment
Unmatched ring gear and pinion
Worn teeth in ring gear or pinion
Excessive backlash in ring gear
Insufficient backlash in ring gear
Loose pinion bearings
Loose differential side gear bearings
Misaligned, sprung ring gear
Loose diffierential housing bolts

• *Loss of Lubricant*

Lubricant level too high
Worn axle shaft grease retainers
Damaged bearing grease retainer
Defective rear wheel bearing gasket
Cracked rear axle housing
Defective pinion oil seal
Restricted lubricant return passage
Scored, warped companion flange hub
Too high wedges at spring seat

• *Overheating of Unit*

Lubricant level too high
Use of incorrect grade of lubricant
Bearings adjusted too tightly
Misalignment of bearings
Excessive wear in gears
Insufficient backlash
Insufficient ring gear to pinion gear clearance

IV. REAR AXLE

• *Axle Breakage*

Improperly adjusted wheel bearings
Misaligned axle shaft housing
Vehicle overloading
Erratic clutch operation
Excessive speeds, rough roads
Grabbing clutch
Use of emergency brake to stop
Normal fatigue

• *Noisy Operation*

Misaligned axle shaft housing
Wear in axle shaft housing sleeve
Bent, sprung axle shaft
End play in pinion shaft bearings
Excessive gear lash
Improper adjustment pinion shaft bearings
Loose pinion companion flange
Improper wheel bearing adjustment
Scuffed gear tooth contact surfaces

V. REAR WHEEL NOISE

Wheel loose on axle shaft taper
Worn wheel or axle shaft keyways
Wheel hub or drum studs loose
Axle shaft rubbing wheel bearing retainer
Insufficient bearing lubrication
Scored wheel bearing cup or cone
Defective, brinelled wheel bearings
Excessive axle shaft end play

Rear Assemblies

(Continued from Page 59)

in many shops are kept too loose, when the mechanic permits an extra tolerance in order to keep the bearing from freezing. It should be remembered that high temperatures have little harmful effect on such parts, that properly adjusted unit may generate heat in such quantities that it cannot be touched with the hand. However, as long as the paint does not burn off the outside of the carrier, the mechanic need not worry about locked bearings due to overheating.

He should worry, however, about loose bearings that soon pound themselves out when adjustments are too loose. A properly adjusted bearing may be very hard to turn by hand and yet be capable of satisfactory service. If manufacturers' adjustment data are adhered to, and dial gages are used for checking wear and gear tooth contact, many miles of satisfactory service can be obtained from a rebuilt differential.

Axle Shaft Breakage

When the axle shafts are removed, inspection may show up potential failures. The shafts should be cleaned and inspected for cracks at the flange head, for twisted splines and cracks in the shaft body. While still hot from the steam cleaner, the shaft should be coated with chalk dust and struck with a hammer to reveal any possible defects, which will appear as a dark line in the chalky surface.

Occasionally axle shafts break—and most breakage should be considered premature, as proper service, lubrication and driving will secure a long-lived unit. It is important to be able to diagnose early axle shaft failures as a step in stopping recurring troubles. The location and characteristic of the break will point to the cause in many cases.

One of the greatest causes of axle shaft failure is erratic clutch operation—or erratic driver actuation of the clutch. Quick engagement of the clutch with a racing engine will impose more torsional twist into the axle than it was designed to take, and metal fatigue will set in. Repeated erratic clutch engagement, especially if accompanied by heavy loads characteristic of the industry today, will develop a weak spot and eventually a crack which becomes an early failure. Failures of this nature usually occur at the splined end of the shaft adjacent to the side gear or in the body of the shaft. These cracks start at the base of the splines and progress toward the center of the shaft body. Final fracture is usually conical in shape. This fatigue torsional stress sometimes shows up as longitudinal cracks and breaks have an appearance resembling the grain in wood. A grabbing clutch or use of the emergency brake to stop the vehicle while it has started backwards on a hill will produce a cleaner break, and the location in many cases is somewhere along the body of the shaft.

Failure of an axle shaft due to misalignment or bending may also occur at any point along the body, but most failures are at the flange end. The broken surfaces are usually flat and show parallel lines of failure over a considerable section of the shaft.

Bent axle shafts may be a result of a bent axle housing or misaligned housing sleeve. This in turn is a result of overloading or too fast speeds over rough, choppy roads. Proper adjustment of the wheel bearings and frequent inspections of the bearings will materially reduce such failures. In most cases the condition will suggest the cure, and the operator should consider the evidence carefully.

Lubricant Loss

Leakage of lubricant at the rear axle pinion shaft may be due to too high lubricant level in the rear axle housing, or it may be the result of foaming of an improper grade or quality of lubricant. A worn pinion oil seal or one improperly installed may permit leakage, as will a loose oil seal retainer. A restricted lubricant return passage in the carrier housing will allow for oil to be thrown out at the pinion shaft. And finally, the mechanic should check the universal joint companion flange and hub as a possible cause. If this surface is rough, scored or out-of-round or if the flange is loose on the pinion shaft, excessive lubricant loss will occur. Use of wedges at the spring seats will tilt the forward end of the carrier so that lubricant will leak out even past a good seal.

A loose rear wheel bearing retainer, or a damaged wheel bearing gasket will permit lubricant from the differential to escape at the wheels. And as a last resort the mechanic should check for a cracked rear axle housing in running down the cause of loss of lubricant at the rear axle.

Rear Axle Noises

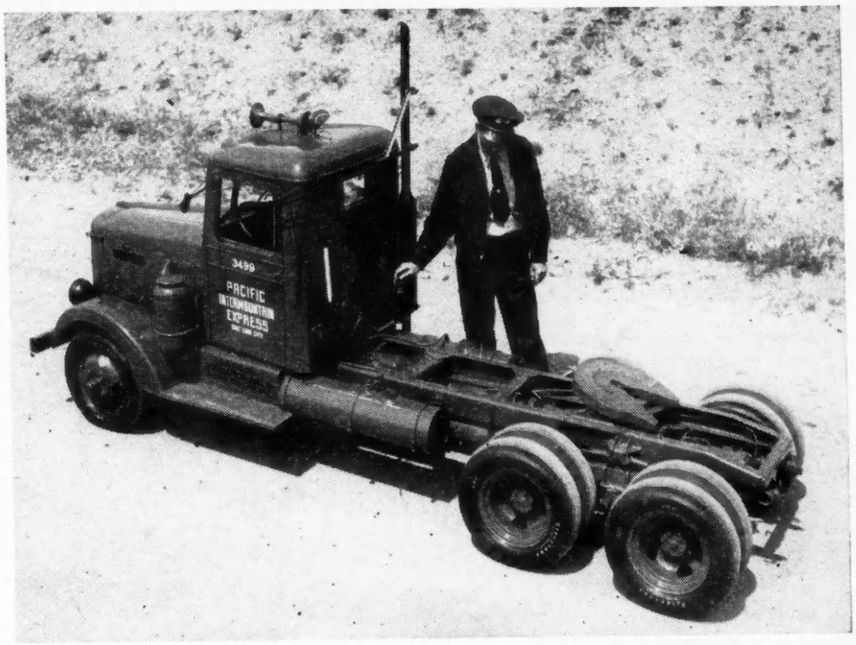
Rear axle noises are hard to distinguish and may appear as a hum or as a growl, usually changing tone when the truck is coasting. Sometimes the noise may be loud when the engine is driving and will die down during coasting. Little attempt will be made here to pin a characteristic noise on any one part of the unit because of the obvious complications involved. Suffice it to say that a systematic click will be initiated and the offending part located by the process of elimination.

Rear Wheel and Tire Noises

Noises originating at the rear wheels may be attributed to the tire, the bearing or the wheel itself. One of the most common causes of excessive noise at the rear wheels is misalignment of the assembly. Inspection and checks with wheel alignment instruments will show up the trouble. It may be due to a sprung rear axle housing, a broken rear spring main leaf or a sprung chassis frame. A broken rear spring center bolt will permit the axle housing to shift on the spring and result in a noisy condition. Use of incorrect rear spring or spring main leafs may contribute to this condition. As a further check the mechanic should check the tightness of all spring seats, hangers, U-bolts and spring clips as possible trouble spots.

Noise may arise from rear wheel run-out or wobble, and this may be a result of loose wheel stud nuts, distorted wheels or rims, bent rear axle shafts, or a condition whereas the rear wheel hub does not fit the shaft taper.

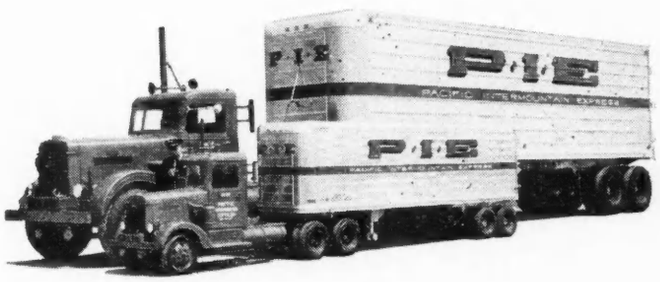
If the noise arises at the bearing itself the mechanic should consider the possibility of insufficient lubrication, improper grade of lubricant, defective wheel bearing cup or worn bearings themselves. It may be the result of axle shaft end play due to improper bearing adjustment.



Even such details as fire extinguisher are faithfully reproduced in P.I.E's half-scale model. Of particular note is the dual-drive rear boggie set-up. Photo below gives vivid comparison between full-sized diesel and the midget

Midget Tractor

Shop-Built for Fleet Promotion



Exact half-scale model has Jeep engine, two transmissions, dual rear axle drive and companion "semi" in same scale

PROBABLY the world's only vehicle of its kind was recently put into service by Pacific Intermountain Express. It is an exact half-scale model of one of the company's most popular full-sized rigs—a Peterbilt diesel tractor and an all-aluminum Brown Industries tandem trailer. They are as near like the standard jobs as human skill and ingenuity could make them. The tractor was built in P.I.E.'s general shops at Salt Lake City while the model trailer was built by Brown in Spokane.

Lest readers be temporarily confused in their arithmetic, it should be remembered that a half-scale model is far from being half size. Since the scaling works in all three dimensions, the cubic capacity of the trailer, for instance, is only one-eighth that of the full-sized job.

Sole purpose of the venture is advertising. The midget is now travelling under its own power in P.I.E. territory and it is expected that its appearance on streets of cities served by the company will create goodwill in adequate proportion to its not inconsiderable cost.

While construction of the trailer was not a simple job, requiring the use of each part in half-sized proportions, it was relatively simple when compared with the intricate details and necessary substitutions involved in the tractor.

A Willys-Jeep engine was selected for the power unit but it required a number of modifications to fit the scale chassis. The only visible evidence of this is the carefully shaped external air cleaner which duplicates the original equipment in design and is actually used for the purpose for which it is intended.

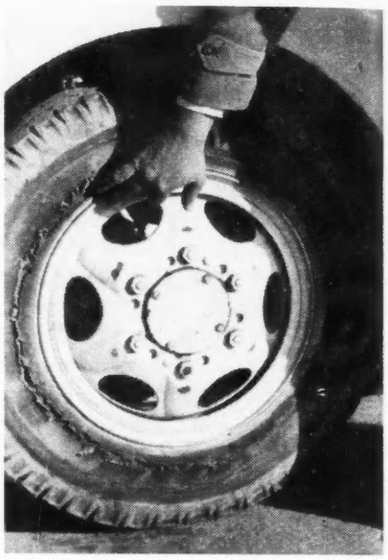
The main transmission happens to be a Studebaker job with three speeds forward and one reverse. The auxiliary transmission was adapted from an old Durant model retaining the three forward speeds but eliminating the reverse. Universal joints are standard Borg-Warner units while both drive lines and axle shafts were made up in the shop.

Perhaps most intriguing is the dual rear axle drive assembly made of Timken axle housings removed from a Stutz automobile and cut down to size, and Timken worm drives, also from a Stutz, but fitted with specially-built gears having a ratio of 5 to 1.

The "Budd-type" disc wheels were stamped out and finished in the P.I.E. shops, then welded to standard 4½-in. drop-center rims. Tires are 4-ply Firestone, 4:50 x 12.

Commenting on the cost of the midget, P.I.E.'s Vice-president C. E. Johnson says: "The full-size tractor costs new right around $12,000 and the full-size semi-trailer costs around $6,500. The midget replicas cost a bit more than that."

Typical fleet equipment undergoing "coming in and leaving" inspection which is part of new campaign. Check covers condition inside and out, tires, etc.



Safety director Hamilton points to tire damage caused by "curbing," a practice strictly taboo in contest

Driver-

Cuts Accident

FLEET SAFETY CONTEST

June 1 to December 1

ANNOUNCING TRUCK SAFETY CONTEST
of
PRICE'S CREAMERIES DRIVERS
for
A SIX-MONTHS PERIOD

Contestants to qualify must drive a minimum of 120 days during the contest period.

VALUABLE PRIZES FOR THE FIVE BEST OPERATORS

First	$50.00 Man's Watch
Second	35.00 Radio
Third	25.00 Radio
Fourth	12.50 Reynolds Fountain Pen
Fifth	10.00 Stetson Hat

In case of a tie the winners will draw number for choice of prizes.

ALL DRIVERS TO HAVE A JACKPOT BANQUET

General inspection committee will be:

John Hellman	Chairman, Safety Committee
O. P. Bond	Garage Department
O. S. Crowson	Shipping Department
E. Martinez	Sales Department
N. C. Pierce	Sales Department
C. E. Hamilton	Sales Department

Each driver will begin the contest witha credit of 2000 points. Inspections will be made once each month by members of the inspection committee. Standing of the driver will be posted on the bulletin board throughout the contest.

GENERAL RULES AND REGULATIONS:

1. Any driver that is involved in a serious accident due to negligence on his part and entirely at fault will not be eligible for a prize and will contribute $5.00 toward the jackpot banquet.
2. Any driver that is involved in an accident and is found to be partially at fault will be subject to a deduction of 100 to 500 points and will contribute $5.00 toward the jackpot banquet.
3. Any driver that is observed with riders in his truck other than employees or approved helpers will be subject to a deduction of 100 to 300 points and will contribute $3.00 toward the jackpot banquet.
4. Any driver that is involved in an accident and is found to have been negligent in any way will have 200 points deducted.
5. Any driver that fails to report an accident or damage to his truck to his department head or supervisor within 24 hours, together with all information for a complete report, will have 200 points deducted.
6. Any driver that fails to report in writing any repairs needed on a truck, whether it is his regular truck or not, will have 200 points deducted.
7. If appearance and general condition of truck indicate carelessness in handling and operating equipment, a deduction of 25 to 200 points will be made.
8. Failure to observe traffic laws and regulations, improper parking, exceeding authorized speed, etc., deduction of 25 to 500 points will be made.
9. Any report reaching the management or inspection committee regarding discourteous driving by any employee in the contest will result in deduction of 100 points.
10. All contributions toward the jackpot banquet will be handled through payroll deduction. The company will buy the banquet if there is no money in the jackpot. Fellows, let's eat on the company!

The winners will be those drivers having the most points at the end of the contest.

THE FOLLOWING IS TO BE SIGNED BY ALL CONTESTANTS:

I have read the foregoing and understand it, and pledge my cooperation:

ANNOUNCING!!

EFFICIENCY CONTEST

June 1 to December 1

In conjunction with the Drivers' Fleet Safety Contest, June 1 to December 1, we are happy to include the entire Garage crew for which prizes will be awarded.

HERE IT IS!

For the months of September, October and November, if the mechanics and garage crew can make a 10% saving in cost of fleet operation over base period of 1945, you will be given a banquet.

If you save 15%, you will be given a banquet and each man will receive a $20.00 bill.

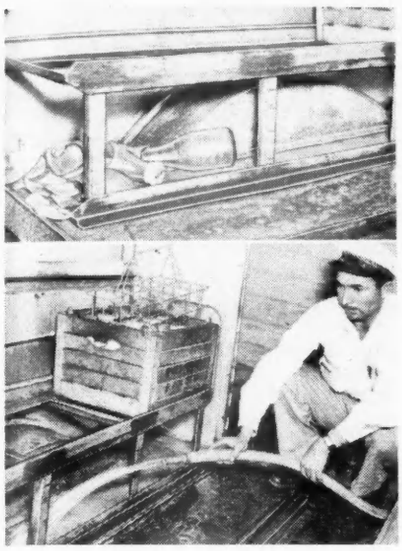
Contestants to qualify must work a minimum of 120 days during contest period.

Cooperation between the garage crew and the drivers will get you a banquet and put a $20.00 bill in your pocket.

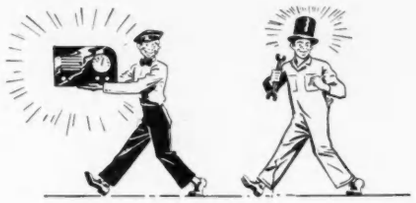
Fellows, let's all pull together!

Left: Announcement of original driver contest lists prizes and conditions, details all rules

Above: "Tie-in" contest for shop crew increased cooperation with drivers, effected 15% cut



"Before and after" photos show improvement in truck condition and in attitude of drivers who now pitch in



One year after start of six-month safety campaign for drivers and mechanics dairy fleet has had no serious accidents; is holding 15% cut in repair costs

by G. E. HAMILTON
Safety Director, Price's Creameries, Inc., El Paso, Texas

Mechanic Contest

and Maintenance Costs

A LITTLE MORE THAN a year ago we instituted our first driver safety contest. Although it got off to a flying start we soon realized that the cooperation of our maintenance crew was an absolute necessity. Accordingly we devised a modified contest for them that exactly filled the bill. Both ended on Dec. 31, 1946.

The mimeographed posters describing the contest and stating all the rules are reproduced (less some decorative art work) on the opposite page. Because of the provisions of rules 1, 2, 3 and 10 of the driver contest, it was essential that the whole thing be set-up on a voluntary basis. But all 36 of the route drivers assigned to the El Paso plant signed up immediately. The shop personnel consisting of a total of eight (we have 70 trucks in all operating from this shop) were covered automatically since there were no penalties involved.

The outstanding success of both contests is measured by the fact that no driver had to contribute a single penny to the banquet fund, 12 were without a blemish on their record, and the shop made its 15 per cent saving netting each member of the department a free banquet plus a $20 bill.

Improvements Hold

EVEN more impressive is the fact that both of these improvements have held up to the time this is being written in June, 1947. We have had no serious or "loss of time" accidents and we have a rating with the National Safety Council Fleet Contest of 12 accidents in 782,000 miles or 1.54 per 100,000 miles. We feel that the contest was largely responsible for this record and it goes without saying that it is being repeated this year.

Even the 15 per cent maintenance saving has been held, killing once and for all the fears of some that needed maintenance would be postponed until the contest was over. On the contrary we found that cooperation between drivers and maintenance men has been permanently improved. Drivers are more conscious of the condition of their trucks and the need for minor repairs; garage crews are quick to make the needed repairs.

In awarding the driver prizes won during the contest we resorted to lottery letting the 12 winners draw for the different prizes. Of course some of them didn't receive anything except the banquet which was attended by all the drivers, all the maintenance crew and their wives.

The Campaign Committee

FOR THE campaign we used a special safety committee. This group was headed by the chairman of the company safety committee. It included the superintendent in charge of truck maintenance, a man from the shipping department, and three members of the sales department.

This committee decided on the conditions of the contest and issued

(TURN TO PAGE 142, PLEASE)

USE POSTCARD — NO STAMP NEEDED

PUBLICATIONS

A selected list of the latest literature—catalogs, pamphlets, charts—chosen to help fleetmen improve operation and maintenance

L118. Brake Instructions

A series of four pamphlets on hydraulic brakes is ready for distribution to the fleet field. They promise a great deal of timely information on brake service.

Pamphlet No. 1 deals with instructions on inspecting, adjusting and checking Ford brakes. Models include 1937 to 1942. Pamphlet No. 2 covers the Chevrolet, Huck and Lockheed hydraulic brakes as found on General Motors and Chrysler products.

Pamphlet No. 3 includes general instructions on the Bendix single and the Bendix double anchor type, the Bendix three-shoe type, Lockheed hydraulic and the Steeldraulic brake.

The last booklet is on Instructions for Installing Rebuilt Master and Wheel Cylinders, showing 10 steps necessary to the attainment of long life in these units. And finally the booklet goes into the proper procedure for bleeding and refilling the system. One complete page is devoted to a trouble shooting check list, showing common hydraulic brake troubles with their respective cures.

One or all of these booklets should find enthusiastic reception in the fleet shop. Any particular one or the complete set can be had for the writing of L118 on the free postcard.

L119. Cooling System

With fall approaching and cooling system reconditioning just ahead, the fleetman will prize this 30 x 24-in., colored chart on the automobile cooling system, showing points where trouble may result from neglect of cooling system service.

This informative chart can be tacked on the wall so that it can be used as reference by the mechanic. The main illustration shows each critical spot in the system, with the diagram cut away in each instance to picture causes of failures. Secondary illustrations surrounding the featured diagram show how to pressure flush the radiator and engine block.

Close-up views of common premature failures are shown in other colored photographs. They include water pump corrosion, hose deterioration, water jacket clogging, radiator rust and clogging, and various leakage conditions. Such "reminders" will do much to keep the mechanic aware of the effects of improper cooling system service and should be valuable in guiding him toward systematic maintenance.

The chart is available for the writing of L119 on the free postcard.

L120. Piston Ring Guide

A new type piston ring selector Graf that quickly identifies the piston ring set for the particular vehicle has been made available to the truck fleet field by a prominent piston ring manufacturer.

This selector consists of a movable card that fits into a slotted container and can be moved up and down to permit the repairman to select the correct ring set for each make of vehicle.

The selector shows the numbers of cylinders and bore for each make or model and number of rings required, along with specifications of ring depth and width. Use of the selector promises to save the mechanic considerable time in locating such information when reconditioning engines.

It is free and it is yours for the writing of L120 on the accompanying postcard.

L121. Diesel Lubrication

Operators of diesel-powered equipment will find a wealth of information in this 50-page publication covering the lubrication of automotive diesel engines.

Introducing the book with some interesting fundamentals of the diesel engine, the author gives a comparison of the gasoline and diesel power units, with detailed description of operation. The discussion of lubricating oil and its relationship to operating efficiency will do much to show operators both how engines are lubricated and how to improve the lubrication of their engines.

Of particular interest to fleetmen will be the chapter on care of the lubricating oil. The instruction on cleanliness will help the operator in keeping his engines clean and free from contamination.

Another division which will benefit the diesel engine user is the final department on trouble shooting hints. The author lists the causes and cures of such common troubles as failure to start, irregular running, stalling, insufficient power, smoking exhaust and knocking.

This valuable instruction manual is yours for the writing of L121 on the free postcard.

L122. Oil Change Guide

Here is a simple but effective tool for showing the exact amount of contamination present in the lubricating oil. Developed through extensive research by a well-known oil filter manufacturer, the device is intended to help keep the operator conscious of his oil condition so that he will service his filter promptly and thus keep his engines in peak operating efficiency with a minimum of maintenance expense.

The ClarOblot consists of reproductions of oil drop stains containing various amounts of contamination. The change point represents approximately .3 precipitation number, at which point the oil becomes dark in appearance, the acidity increases, solids deposit in valve chambers and plug up oil holes, etc.

Cards and additional information are available by writing L122 on the free postcard.

L123. Decal Sign Guide

"Ads on Wheels," the first complete guide book to truck decal sign advertising ever published is being prepared for free distribution to fleet owners. This new booklet, showing scores of truck decals and trucks in full color, describes how and where to use decals to utilize the advertising space on trucks.

Illustrations demonstrate different aspects of truck decal advertising as well as safety signs and other devices. The booklet also describes a new "brand-mile" standard for rating the effectiveness of truck advertising, explains how to cash in on free ad space with decal truck signs and shows how to make trucks "mobile billboards."

Copies of "Ads on Wheels" may be obtained by writing L102 on the free postcard.

USE POSTCARD — NO STAMP NEEDED

NEW PRODUCTS

The newest in replacement parts, accessories, shop equipment, supplies—illustrated and described in brief for the fleetman

P1. Flushing Nozzle

Back flushing the radiator and engine block of any car or truck is said to be quick and easy with the new type radiator flushing nozzle developed by Homestead Valve Mfg. Co., Coraopolis, Pa. It is intended for use with the many High Pressure Jenny Steam Cleaners now in service throughout the automotive industry.

The flushing nozzle fits all sizes of radiator hose and affords a positive hose seal without the use of clamps. A single twist of the nozzle into the rubber hose assures a positive seal that will withstand the 80 to 120 lb steam pressure generated by Hypressure Jenny during the flushing operation.

Use Free Postcard for More Details.

P2. Quick Charger

A new 6-amp Home-Type Battery Charger has been developed by the Bowers Battery and Spark Plug Co., Reading, Pa. and is now in full production.

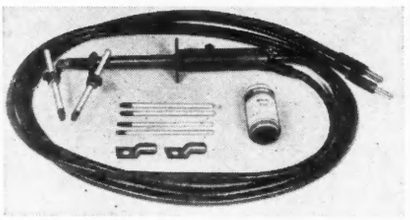
Charging at a 6-amp rate, the charger will fully recharge a battery overnight. Operates on 110-120 volts A. C. through the use of a heavy duty selenium rectifier. Protected with an automatic circuit breaker which eliminates the use of a replaceable fuse. It weighs 6 lb.

Use Free Postcard for More Details.

P3. Arc Torch

Many welding and brazing operations for which a very soft flame is the most suitable source of heat, can now be done by the double- carbon arc process, using the new Phillip Arch Torch which has been announced by C. E. Phillips & Co., Detroit.

Current conducting members of the Phillips Arch Torch are two concentric metal tubes, one sliding easily within the other and insulated by a fiber sleeve, thus automatically maintaining alignment for all adjustments of arc gap width. A control button is located in the fiber handle so that it is directly below the thumb when the torch is held naturally in the hand.



Weight is distributed to give good balance and maximum ease of operation.

The torch can be used with all types of arc welding machines, ac or dc, and is furnished with both bayonet type and lug type terminal connectors. It will accommodate carbon electrodes from ¼ in. to ⅜ in. diameter without changing holders or using adaptors.

Use Free Postcard for More Details.

P4. Clearance Lights

New Kleer-King Clearance and Marker Lights for trucks and buses are announced by The Teleoptic Co., Racine, Wis. Features include maximum visibility, greater protection and handsome appearance.

Four models are available, with amber, white, read or green lens. Simple flush mounting permits easy installation. Lights weight 8 oz each.

Use Free Postcard for More Details.

P5. Fork Lift

A new fork lift truck accessory, the Revolving Carriage, designed for handling solid, liquid or granular bulk materials which require movement from one container to another, has been announced by Towmotor Corp., Cleveland, Ohio.

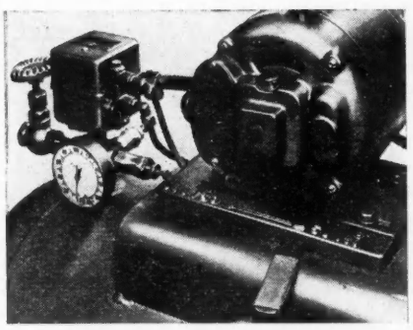
The Revolving Carriage revolves in a 360 deg circle in either direction, with power being supplied by a hydraulic motor through a chain drive. Operation is controlled by a valve conveniently located near the lift truck operator. A container mounted on the truck forks can be turned 180 deg, to provide complete dumping, in approximately five seconds. Installation of the Revelving Carriage Accessory does not affect the normal operation of Towmotor as a fork lift truck.

Use Free Postcard for More Details.

P6. Dual Compressor

Kellogg Division, American Brake Shoe Co., has developed a new dual-pressure air compressor which can handle an extremely wide variety of jobs.

Although this compressor is basically a standard single ½ hp. compressor, operating at the cost of one unit, it provides the performance characteristics of two



separate compressors—2.4 c.f.m. of free air at 50 lb pressure, and 1.2 c.f.m. of free air at 150 lb pressure. Change in pressure and volume is effected b yan automatic motor pulley and sliding motor base. A hand lever moves this assembly, while the compressor is running, from one pressure position to the other, varying the motor speed and controlling the pressure through contact with a low pressure unloader valve.

When the lever is set at 50 lb pressure, the automatic motor pulley is increased in pitch diameter, thus operating the

(TURN TO NEXT PAGE, PLEASE)

NEW PRODUCTS

USE POSTCARD — NO STAMP NEEDED

(Continued from Page 65)

pump at increased speed and delivering a higher volume of air. In this position the sliding motor base permits the low pressure unloader valve to unload at 50 lb. pressure, unloading the tank, and allowing the compressor to run continuously.

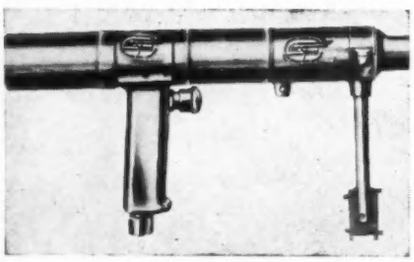
This new dual-pressure compressor is available in two models: Model No. A-140-D with electric motor drive (illustrated); and Model G-E-140-D with gasoline engine drive (¾ h.p.).

Use Free Postcard for More Details.

P7. Valve Grinder

Produced as a companion item to the Air-Speed Saw and File tool, the new Valve Grinding Attachment, distributed by Air-Speed Tool Co., Los Angeles, Cal., is designed to slip into the nose of the regular tool. This conversion head thus changes the main power unit into a saw, file or automotive valve grinder.

The new valve grinding unit attaches to the body of the present Air-Speed Saw and File tool by simply removing the front tool chuck guard and chuck, attaching the



geared shaft and slipping on the adaptive head. The complete conversion kit consists of attachment head, valve-lifting spring, rubber vacuum cup foot and a four-way steel foot.

Designed and manufactured by the Thie-Von Engineering Co., of Los Angeles.

Use Free Postcard for More Details.

P8. Hand Truck

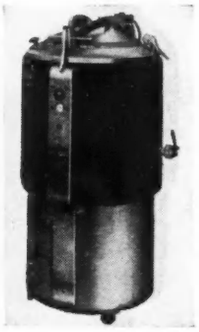
A new model industrial hand truck is available from the Handies Co., Bloomington, Ill. The unit features dual-mounted solid rubber wheels, has load capacity of 1000 lb and is constructed of strong tubular steel.

Wider wheel spread reduces danger of tipping under load when small objects are passed over on floor. Offset axle mounting and truck height of 54 in. provides for easier load "break-over" and allows the wheels to carry the load. The four 8 x 2 in. wheels are equipped with Chrysler Oilite Bearings which are prelubricated.

Use Free Postcard for More Details.

P9. Oil Refiner

The new portable Automatic Oil Refiner, now being marketed by The Holden Co., Buffalo, N. Y., now makes it possible for fleet owners and garage operators to save up to 90 per cent of their crankcase oil costs. Dirty drain oil, formerly thrown away, may be completely re-refined for less than 20 cents a gal.



The Automatic Oil Refiner takes any make of dirty crankcase oil and completely re-refines it, removing all impurities in twenty minutes, according to the manufacturers. Handling 3½ gal per batch, it has a capacity of nearly 90 gal per eight-hour day.

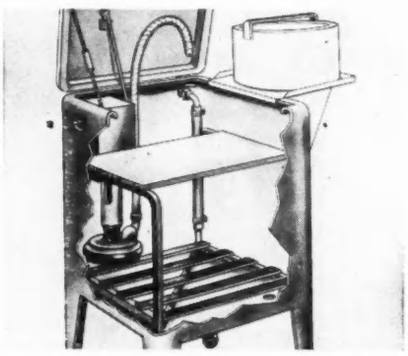
The Automatic Oil Refiner is simple to operate. It utilizes a specially developed, low cost catalyst and filter.

The refiner is 25 in. in diameter, 44 in. in height, weighs only 300 lb and is mounted on casters. It operates on either 110 or 220 volts, on 60 cycles.

Use Free Postcard for More Details.

P10. Agitator Cleaner

A new model, the H-83, has been added to the Gray-Mills line of Agitor Cold Parts Cleaning Systems. The unit measures 21 in. square and has an overall height of 34 in. It has a 24-gal solvent capacity.



Air-Agitation and high-volume hose-cleaning are combined in the H-83 for two-way utility. An improved high volume centrifugal pump is provided for flushing out recesses and removing softened grease, or for brush-cleaning under the flowing solvent.

The unit uses cold solvent, and no heating is necessary. A work shelf to accommodate parts being hose-cleaned is built inside the tank. An improved safety device incorporating a fuseable fire link which melts at 165 deg is built into the machine. The H-83 is mounted on revolving casters which make it portable.

Use Free Postcard for More Details.

P11. Leak Detector

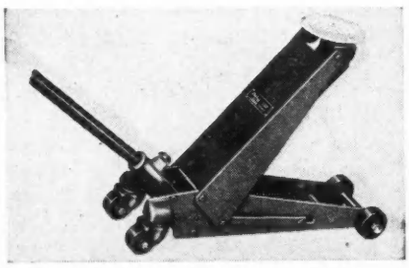
Tels, a new scientific instrument available through James Industries, Skaneateles, N. Y., quickly and positively reveals leaks in the cooling system. Tels duplicates normal engine operating pressure at which most leaks become serious. By applying the proper pressure, as shown on the complete service chart supplied with the instrument, the maintenance man can quickly determine the location of the leak. Or, if there is no leak, he can quickly spot the cause of the overheating.

The instrument is also useful for testing and blowing out fuel lines, blowing out carburetor needle valve, and many other purposes where low pressure is required.

Use Free Postcard for More Details.

P12. Hydraulic Jack

Berg Mfg. and Sales Co., Chicago, announces the introduction of a new Model 1500 Shur-Lift Hydraulic Curb Jack. It is all-steel construction, composed of a heavy sheet metal carriage and elevating frame with oversized elevating levers.



A removable 48-in snap-in type handle for raising the jack has a special designed socket equipped with a button release, easily manipulated by foot. The hydraulic mechanism is completely sealed against dirt and grit and has an automatic safety valve to prevent accidents and damage which may occur due to excessive overloading. Model 1500 is rated at 3000 lb. capacity.

Use Free Postcard For More Details.

P13. Remote Control

The Central Tool Co. of Cranston, R. I., had added a new accessory to its line, simplifying measurements of cylinders.

Remote Control enables the mechanic to set a Central inside micrometer without removing it from the hole being measured. Use of the device for measuring straight holes is simple. After it is assembled to the micrometer head, the mechanic inserts the micrometer into the hole to be measured and by operating the turning knob at the end of the Remote Control handle adjusts the micrometer to the diameter of

the hole, then removes the micrometer and takes the reading.

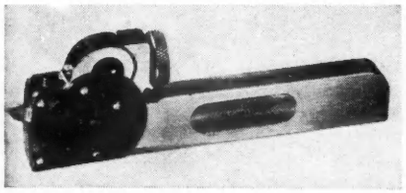
The only care required of the tool is the necessity of keeping the rubber friction roll free from oil or grease.

Use Free Postcard for More Details.

P14. Threading Tool

Eliminating the gooseneck in a threading tool and employing an entirely new principle in tool construction, the Ideal Threading Tool Holder announced by Guarantee Tool Co., Inc., West Orange, N. J., is claimed to reduce by more than 40 per cent the operating time required to cut a thread in a lathe.

The announcement states that this threading tool holder, made to hold a single point cutting tool, is so constructed that the cutting tool retracts in a horizontal



plane away from the work when the pressure is too great for efficient cutting, thus preventing breakage of the tool point or damage to the work piece.

Use Free Postcard for More Details.

P15. Portable Charger

A new portable fast charger, the smallest and lighest charger for its capacity available, has been announced by the Allen Electric and Equipment Co., Kalamazoo, Mich. The new charger, known as the F-52, is smaller than the battery itself yet it provides a complete range of high and low charging rate, the company stated.

The new Allen F-52 has a full operating rangs from 10 amp to 75 amp. It can be

used for both fast and slow charging. It has plenty of reserve power for immediately starting cars and trucks even though the battery is completely discharged.

Use Free Postcard for More Details.

P16. Bolt Cutter

The Manco Mfg. Co., Bradley, Ill., has announced a greatly improved new Carolus Type Cutter.

The new model features drop-forged handles instead of the conventional malleable iron castings adding strength and streamlined design. Another feature of the cutter is the 2-way cutting jaw providing both side and end cutting action which enables the operator to cut bolts in hard-to-get-at places. These cutting jaws are also available in a 3-way combination incorporating a nut splitter.

Use Free Postcard for More Details.

P17. Wheel Chocks

A new development of the All-Top Rubber Products & Specialty Co., Newark, N. J., is the Safe-T-Choc, a wedge-shaped block of rubber, serving innumerable purposes in fleet operation. The chock is used as a block to prevent trailers from rolling, as a curb ramp for mounting banks and curbs, as a freight anchor for rolling freight, for blocks on grades or for safety stops for blocking vehicles on lifts.

Use Free Postcard For More Details.

P18. Brake Drum Gage

A new type brake drum gage developed by Van Norman Co., Springfield, Mass., is said to provide one of the quickest and easiest methods of measuring the diameter of a brake drum.

After the drum diameter has been acquired, the micrometer scale can be set on the Van Norman Brake Shoe Burnisher to duplicate this diameter on the brake shoe —thus obtaining extreme accuracy. Reading can be obtained on drums from 9 to 16½ in. in diameter. It is claimed that use of this tool results in a job that saves time in the shop and cuts down the number of second adjustments.

Use Free Postcard for More Details.

P19. Foam Extinguisher

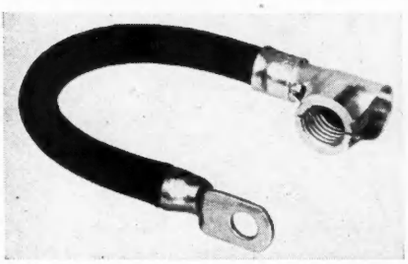
The newest in fire extinguishers is the splash-proof Foamite Firefoam for vehicle service, as recently announced by American-LaFrance Foamite Corp. of Elmira, N. Y. It has a sealed stopper construction built into the top which prevents the chemicals from mixing until needed. Just a twist of the wrist releases the seal and the extinguisher is ready for action.

It is said to be the ideal fire extinguisher for tank trucks and other large vehicle units because it produces a fire-killing chemical foam equal to approximately 10 times its own capacity. It stops oil and gasoline fires and prevents reflashing.

Use Free Postcard for More Details.

P20. Battery Cable

The Snapon Battery Terminal Co. of Dallas announces the design and manufacture of a new type heavy duty battery cable which may be attached or removed from the battery post by inserting a screwdriver in the visible side slot and slightly springing the head open. Internal threads



on the terminal grip the post tightly when the screwdriver is withdrawn and the terminal tapped on down.

Use Free Postcard for More Details.

P21. Plug Cleaner

The new "Twin-Jet" Spark Plug Cleaner, placed on the market recently by Master Products Mfg. Co, Los Angeles, Cal., permits multiple installation—"one for every mechanic"—because of its low cost.

This cleaner is small and compact and is designed to mount on a wall or work bench in several locations in the shop to provide time-saving and more efficient spark plug service. It is tapped for standard air line connectors and operates at any pressure between 75 to 125 lb.

Use Free Postcard for More Details.

P22. System Guard

The McRay Sales Co., Pasadena, Cal., has developed a unit designed to eliminate corrosion and electrolysis in the entire cooling system of gasoline or diesel engines. This device is said to prevent formation of scale and to remove deposits which have accumulated.

A number of zinc and copper plates, mounted in series and enclosed in a box, make up this electrolytic device which generates an electro-motive force when submerged in the heated water. Mounted between the engine and the radiator the McRay Treater sets up an electro-motive force which renders the salts and minerals inert, and at the same time removes scale and corrosion.

Use Free Postcard for More Details.

(TURN TO PAGE 149, PLEASE)

Low Temperature Deposits

by

E. J. BOWHAY
Automotive Engineer

and

E. F. KOENIG
Asst. Supervisor of Products Application, The Texas Co.

ENGINE

★ . . . Resulting from Low

★ . . . Resulting from Motor

EXTENSIVE INVESTIGATIONS have been carried out toward minimizing engine deposits and oil oxidation occurring under high temperature operating conditions such as heavy duty bus and truck service. Low temperature operations have not received this comprehensive attention, and thus many operators have suffered as a result of engine deposits from operating conditions normally considered to be mild. However, these "mild" conditions are actually more severe in some respects than many high temperature operations.

Results of analyses of engine deposits and used oil from a recent test show that they are composed primarily of fuel diluent, water and free mineral matter (lead compounds from fuel combustion, and iron and aceous material occasioned by engine wear), along with lesser quantities of carbon and carbonaceous material (principally fuel soot) and oxidation products. It is significant that the acidic materials formed in low temperature operation are not corrosive to alloy bearings under the conditions investigated.

With low temperature operation, contaminants from the combustion chamber evidence themselves as insoluable material in the lubricating oil and as deposits on various engine parts. Experience has shown that most of the deposits accumulate in the oil pan and valve compartments; oil ring and piston skirt deposits are small in comparison. The latter, however, are considered to be very important, since they contribute directly to poor oil control, spark plug fouling and piston seizure. The relative amount of these materials deposited out on the engine parts or remaining in the oil, to be drained out at the oil change period, depends upon the ability of the oil to retain them in suspension.

Under conditions of "cold" engine operation, water vapor from the fuel combustion process condenses on the cool engine cylinder walls from where it is scraped by the piston rings and washed by the oil down into the crankcase. Water vapor reaching the crankcase directly as a result of piston blow-by or entering with crankcase ventilating air also condenses on the cooler sides of the crankcase and crankpan. Other blow-by products containing the oil may include unburned fuel, resinous materials from oxidation and polymerization of the certain high boiling fuel fractions, fuel soot and lead residues. The water and the oil containing these contaminants emulsify to form a mayonnaise-like sludge which rapidly drops out of the oil and deposits on engine parts. The rate of setting is greatest where the velocity of the oil flow is lowest, thus accounting for the heavy deposits that are prone to form in such places as the valve compartment.

On piston and in the oil ring slots, the deposits are a combination of these resinous materials from the fuel and sludge from the circulating oil which bake and harden upon striking these comparitively hot engine parts.

Four possible means of preventing or minimizing the formation of these deposits present themselves: 1. Employ fuels which will give more complete combustion. 2. Employ lubricating oils which are capable of keeping contaminants in finely divided suspension rather than permitting them to be deposited on engine parts. 3. Alter operating variables so as to minimize the formation of these contaminants. 4. Improve mechanical conditions to reduce the rate of crankcase oil contamination.

Test Results

EFFORTS to evaluate the merits of these possible corrective measures led to an extensive program of laboratory engine tests covering fuels, lubricating oils, operating variables and mechanical factors. Results of this program follow:

Inasmuch as low temperature deposits are associated with products of incomplete combustion, it follows that the fuel employed should have some bearing on the formation of such deposits. The part played by fuels is currently under investigation, and while data are by no means complete, sufficient information has been

* From papers presented at the SAE Summer Meeting, June 1-6, 1947.

DEPOSITS . . .

Temperature Operation

Oil and Gasoline*

accumulated to show that improved engine cleanliness may be obtained by assuring more complete combustion with certain fuels.

Effects of Oil Type

THE AMOUNT of oil insolubles (blow-by contaminants from the combustion chamber) produced under a given set of low temperature operating conditions is approximately constant and as oil insolubles increase in quantity, engine deposits decrease. It follows, therefore, that the relative amount of these contaminants remaining in the oil or deposited upon engine parts depends upon the ability of the oil to retain them in suspension. From overall performance, it appears that additive oils should be used. However, they do not comprise a complete solution to the low temperature sludge problem.

It is possible that the more viscous oils may contribute to the deposit reduction through improved piston-cylinder seal. However, this reduction of deposits appears to be primarily a result of the ability of the heavier oils to hold more contaminants in suspension to be drained with the used oil rather than deposited throughout the engine. It is apparent from the test that the most viscous lubricating oil consistent with starting requirements and other factors should be used.

Tests at jacket temperatures from 95 to 180 deg. F. demonstrated that increasing jacket temperature to 120 deg. F. resulted in considerable reduction in deposits; further increase to 180 deg. F. resulted in still greater reduction. It is therefore apparent that every effort should be made to maintain operating water jacket temperatures in the 160-180 deg. F. range at all times. Operations would be improved by not idling at all, since even under the most favorable conditions investigated, considerable dilution and oil contamination occurred.

An increase in crankcase oil temperature from 155 to 180-200 deg. F. resulted in a significant reduction of oil ring and pan and cover plate deposits. It is therefore evident that crankcase oil temperature should be maintained at approximately 180 deg. F., in order to minimize deposits, and at the same time, avoid excessive oil oxidation.

Combustion Efficiency

SINCE ENGINE deposits are associated with poor combustion of the fuel, any measures taken to improve combustion (such as increasing the intake mixture temperature) would be expected to reduce deposits. Increasing intake mixture temperature resulted in a consistent and substantial reduction of all of the deposits examined. However, it is significant that at mixture temperatures of 160 deg. F. and higher, carbonaceous deposits were observed in the induction system. These data indicate that for best overall engine performance, intake mixture temperature should be maintained at the highest value possible consistent with freedom from induction system deposits, loss of power and detonation.

Tests were conducted at air-fuel ratios ranging from a lean value of 18.2:1 to a rich value of 10.5:1. In the case of lean mixture deposits were generally increased over those obtained at normal mixtures, possibly due to intermediate combustion products with this slower burning mixture and the presence of excess air. With rich mixtures, piston and oil ring deposits were reduced. However, pan and cover plate deposits were increased at richer mixtures, possibly due to the deposits which normally form on pistons and oil rings being washed down.

In actual service rich mixtures are not very practical because of fuel economy, while lean mixtures lead to detonation and preignition with their attendant serious difficulties. It thus appears that alleviation of the low temperature sludge problem through carburetion is not feasible. It is indicated, however, that carburetion equipment should be maintained in good condition with adjustments conforming to the best service practice.

It is evident from the test that there was a marked reduction in engine deposits with more frequent oil changes. It is obvious that all efforts should be made to change oil as frequently as possible consistent with allowable costs, maintenance schedules and operating conditions.

Results indicate that best reduction of engine deposits can be obtained by the use of an efficient full-flow oil filter. However, the standard by-pass

(TURN TO PAGE 108, PLEASE)

Truck Trick No. 1, the Orscheln parking brake, has been so successful it is now marketed commercially throughout U.S.

Truck Trick No. 2, the Orscheln Self-supporting tail gate has so far flopped. For other successful tricks, see text

TRUCK TRICKS

Smooth Out Fleet Operation

New uses for old tractors, better brakes, improved overhaul procedures and new body equipment among fleetman's finds

by AL ORSCHELN
Maintenance Superintendent, Orscheln Brothers Truck Lines, Moberly, Mo.

THE MOTOR FREIGHT business responds to tune-up just as does the truck engine. Only by working out the single details and completing each one, can a satisfactory end result be achieved. when we realized that a policy of constant improvement of smallest details, would help make the whole business run more smoothly, it made it more important and worthwhile to keep the little problems whipped. It doesn't hurt to have a list of things that need some measure of correction. Once you have started on such a campaign the results can be surprising.

Of course not all the problems are little ones. Quite a long time ago we discovered we had the problem of what to do about pick-up trucks and what we could do to improve the pick-up service at our terminals. We were far from satisfied with the overall economy picture, the ability to haul heavy loads and other features.

None of the existing models in new trucks seemed to fit our idea of what a terminal pick-up truck ought to be. Considered in the light of capital investment, light trucks seemed too light for our heavy loads and heavy-duty trucks cost too much and seemed too heavy for our light loads.

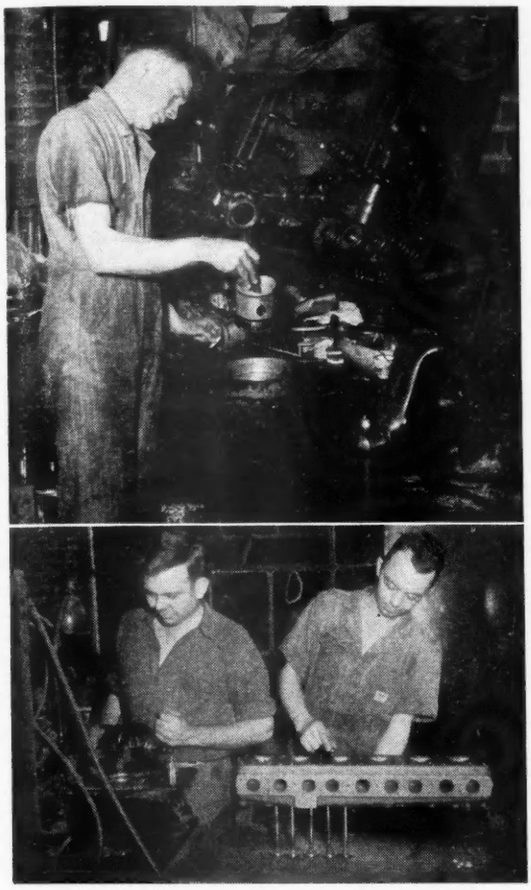
We solved this problem to our complete satisfaction without buying any trucks at all and we now get maximum efficiency and economy, heavy-duty capacity, long-life and cheap tires on a minimum capital investment. We also fell heir to a surprising dividend—a 1000-lb. payload increase on our transport trucks.

Tractors for Pick-Ups

ALL OF THIS was accomplished by buying 146-in. instead of 135-in. wheelbase tractors for our regular freight line service which operates from Kansas City to St. Louis and Chicago, and by selecting our terminal pick-up trucks from the best of these tractors after they have traveled 200,000 miles or more. On this length wheelbase we have designed a special body for terminal freight hauling.

For tractor work we set the fifth wheel 15 in. ahead of the axle, or a little more than the required safety factor of 10 per cent of the wheelbase. This position allows us to carry the additional half-ton payload on the trailer without overloading.

(TURN TO PAGE 126, PLEASE)



Top. Piston ring lands are machined and checked for accuracy, assembly dunked in castor oil

Above. The valve department where specialists developed patented process for hard facing

H & H Job Specialists Develop New Slants on Shop Practices

Hard-faced valve process, sure cure for piston ring troubles and better equipment are products of full departmentization

by H. L. ZIMMERMAN
Shop Foreman, Huber & Huber Motor Express, Louisville, Kentucky

WHEN MECHANICS CAN specialize in a fully departmentized fleet garage such as ours and such as described in last month's article (CCJ, July, p. 34), it promotes the study of fleet problems and results in men turning up new and better methods of repair and maintenance.

The outstanding example in our organization is the invention of a valve hard-facing process which has been patented by two of our men. The treatment is now used on all our valves, new and old, and has become so popular that other fleets in this area now send us valves for hard-facing. We have some of our hard-faced valves that have passed the 65,000-mile mark without wear, in vehicles that previously ran only a few weeks without valve trouble.

This process differs from other processes. The applied metal which has a hardness of 41-43 Rockwell, does not penetrate the metal very deep but is more of a sweating process. The excessive heat under which most valves operate does not seem to effect the bond between the hard-facing metal and the original valve metal.

After each overhaul, signed card on dash reminds driver to take it easy

While perfecting this process and whipping our own valve problems in the fleet, the boys found out a lot of things about valves, things they wouldn't have had time to study if they worked on valves one day and brakes and tires the next.

Some of our units turned in worse valve records than others. We had several in which some of the valves had to be replaced at 10,000 and 15,000 miles. We found that these valves stretched and that the stretch was due to heating which heated the stem and allowed the constant hammering to extend the valve's length. We found the heating was primarily due to leakage. Not only did we have to replace valves under such conditions but this leakage and heat ruined many valve guides which often had to be replaced at the same time as the valves.

With our new hard-faced valve we have less leakage, no stretch and valves checked have clean stems and clean guides. We seldom replace guides when replacing valves now.

The boys have made another discovery but one in which they are not sure. It's an interesting problem that may lead to further improvements that will reduce operating costs.

This observation is that in the case of intake valve burns and cracked

(TURN TO PAGE 136, PLEASE)

CCJ QUIZ

by ROBERT F. BAHL

Here's something for a brainy day . . . ten questions to sharpen your wits. Watch out, though—the ones that look easiest are the tough ones. Answers are on page 75.

1.

"A certain trucking company has a scheduled operation between New York and San Francisco. Every day of the year, Sundays included, a truck leaves New York at noon for San Francisco. Also at noon each day, an eastbound truck leaves San Francisco for New York. The cross-country trip takes each truck exactly 7 days. How many "fellow trucks" will the truck leaving New York today meet on its way to San Francisco?"

2.

Would it be legal to operate a truck that is wider than it is long?

3.

In one container you have exactly a gallon of Texaco gasoline. In another you have a gallon of that good Gulf gasoline. Now suppose you take a pint of Texaco, pour it into the Gulf, and mix thoroughly. Then, from the mixture you draw a pint and pour that back into the Texaco. Now . . . is there more Texaco in the Gulf container or is there more Gulf in the Texaco container?

4.

A delivery truck is racing along at 60 miles per hour. It hits a rock and jolts a package 6 ft. into the air. The truck platform is 4 ft. from the road and the package falls at the rate of 30 ft. per second. How far behind the truck will the package be when it lands?

5.

Down in Kentucky there is a road that goes uphill for 10 miles; then it goes downhill for 10 miles. If a truck travels the uphill portion at a speed of 20 miles per hour, how fast would it have to go on the downhill stretch to average 40 miles per hour for the entire 20 mile distance?

Mechanic SLANG QUIZ

The following expressions are peculiar to the automotive mechanic and especially to those engaged in the repair of trucks. Can you identify them?

1. **Pull the punkin.**
2. **Take off her hat.**
3. **Put on the roof.**
4. **Barrels.**
5. **Slush pump.**
6. **Sewer pipes.**
7. **Warp it up.**
8. **Barnyarding.**
9. **The Moose.**

Answers on Page 75

6.

One rainy night in an unfamiliar area, a truck driver came to a spot where three roads met. He looked anxiously for the signpost that would show him the road to his destination, but it had fallen into some bushes. He knew nothing about the area and he had no map, yet he was able immediately to put up the sign in its correct position. How did he manage to do this?

7.

The boss offered his truck-drivers their choice between a salary of $20 per week with a $5.00 raise every week or of $80 per month with a raise of $50.00 every month. Which would you take?

8.

Would you say that the gasoline in your truck was (a) flammable, (b) inflammable, or (c) uninflammable?

9.

If you boil over on this one, try using a permanent anti-freeze. The question is . . . if you add 2 gallons of alcohol to 2 gallons of water, how many gallons of liquid will you have?

10.

One truck leaves New York for Washington and travels at a speed of 25 miles per hour. At the same time another truck leaves Washington for New York and travels on the same road at 50 miles per hour. When the two trucks meet, which is nearer New York?

"You the guy that advertised for an aggressive young truck driver?"

JOBSERVATIONS

by Buster Rothman

Show people you are a live wire and they won't step on you.

★ ★ ★

The only people who raise any dust are those who keep moving.

★ ★ ★

Take a chance: even the turtle gets nowhere until he sticks his neck out.

★ ★ ★

You have to keep a stiff upper lip when your nose is to the grindstone.

★ ★ ★

You can't climb the ladder of success with cold feet.

★ ★ ★

Hit the ball over the fence and you can take your time going around the bases.

★ ★ ★

Before you flare up at anyone's faults, take time to count ten—of your own.

"Now don't get excited. I just want to buy your car."

Quiz Answers

CCJ Quiz on page 72

1. The answer is 15. As the truck left New York today it met a truck that had left San Francisco exactly seven days before. From now on the truck meets two others (not just one daily including the one that just leaves San Francisco as the truck gets there. It meets each truck that leaves San Francisco during the week it is on the road plus all of the trucks that had left San Francisco during the previous week.

2. It would be impossible. Technically speaking, nothing can be wider than it is long, since length is the name applied to the greater of two dimensions. Look it up in the dictionary.

3. Both the same. Equal amounts were transferred. Both containers still contain exactly 1 gallon. Any Texaco that is missing from the first container is made up by Gulf and vice versa.

4. All those figures are just to confuse you. They really make no difference. The package will fall back into the truck. It is a scientific fact that anything that is borne along with a moving car shares in full the motion of the car after being separated from it. The package continues to travel forward at 60 mph. even after it is jolted upward from the truck.

5. It is impossible under the stated conditions to average 40 miles per hour for th entire distance. To do so, the 20 miles total must be covered in 30 minutes. BUT, it took the truck just this length of time—30 minutes—to make it up the hill. So, there is no time left for the downhill stretch, and the truck couldn't make it no matter how fast it went.

6. The signpost had 3 pointers. The driver just set it up so that the arrow bearing the name of the town he had just passed through was pointing along the road he had just come over.

7. The weekly proposition would be more profitable. In a year's time a driver would earn $7670. With the monthly raises, he would make only $4260 for the year.

8. Both (a) and (b) are correct. The two words mean the same thing—easily bursting into flame. In this case the prefix "in-" doesn't mean "not". It means "into".

9. The obvious answer is 4 gallons, but it's wrong. Here is a case where 2 plus 2 doesn't equal 4. The correct answer is 3.8 gallons. When you mix alcohol with water, a contraction of volume takes place due to the diminution of the molecular interstices of the 2 substances in the chemical combination. The total volume of the mixture will be about 4% less than the volume of its constituents. So, you see, it wasn't a trick question after all—just a scientific fact.

10. Neither. When the two trucks *meet*, they are at exactly the same distance from New York.

Answers

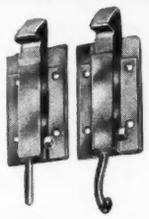
To Mechanic Slang Quiz

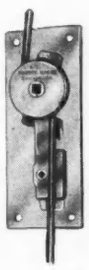
1. **Remove the differential carrier assembly.**
2. **Remove the cylinder head.**
3. **Install the hood.**
4. **Cylinders.**
5. **Mechanic's helper.**
6. **Tubing to hot water heater.**
7. **Tighten a bolt or nut.**
8. **Working on cars or trucks in spare time.**
9. **The Shop Foreman.**

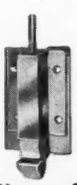
DRIVER UPS AND DOWNS

More data on the life of the average long distance truck driver is supplied by the Monroe Auto Equipment Co. of Monroe, Mich. It seems their statisticians have figured that while traveling some 300 miles in a working day, the poor fellow also is bouncing up and down a distance equivalent to seven times the 1248-ft. height of the Empire State Building.

Although the maximum bounce may be only 2 in. and the average only an inch, the frequency with which the bounces occur on an ordinary "smooth" highway are so great that the total vertical "travel" of the driver's body is about 30 ft. per mile or nearly 1¾ miles per driving day.







Hansen Slam-and-Take-up Lock

SUPPLYING refrigerated air to the interior of an air liner, this truck unit is a product of the International Harvester Company and uses a Metro body fitted with Hansen Hardware. It pays to keep pace with the times!

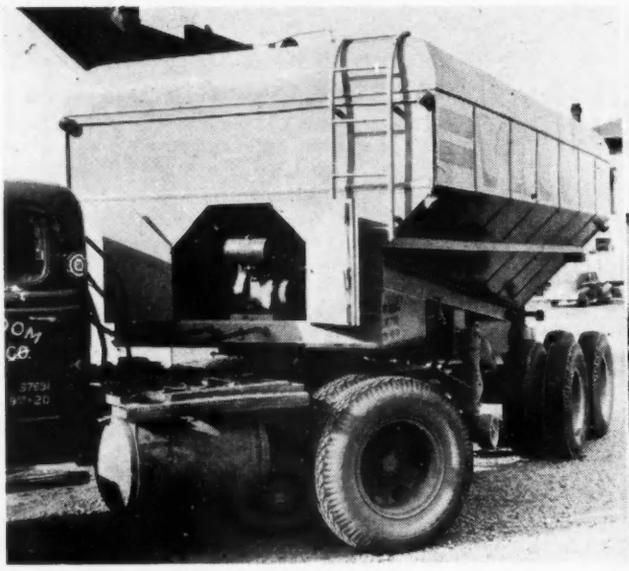
The job of the refrigerating unit and that of the Hansen Lock used is to keep the cold in and the heat out. The Lock, with its slam-and-take-up bolts, keeps the doors tight-shut and rattle-proof.

Custom-built bodies are better, stronger, more durable and require less upkeep when Hansen-equipped. The Hardware for hard wear, Hansen often outlasts units on which installed. *What are your requirements?*

Hansen makes a complete line of body hardware and one-hand fackers.

Request Details

A. L. HANSEN MFG. CO.
5047 RAVENSWOOD AVE., CHICAGO 40, ILL.



Left: Four-hp. gasoline engine in front of cement trailer drives Roots blower to supply "aeration"

Right: One of the new Gramm bodies with wheelhouse, side and full-rear doors. All are optional

Gramm Trailer

Presents Truck Body Line

12, 14 and 16-ft. Unisteel models offered assembled or knocked-down. Company also has new "aerated" bulk cement trailer

A LINE of Unisteel van truck bodies of pre-fabricated type in three lengths and two widths has been announced by the Gramm Trailer Corp., Delphos, Ohio. They are available in sill-mounted or wheelhouse types. All fabricated sections and parts are constructed in precision fixtures, assuring close control of dimensions and making for easy assembly.

The major sections and parts that go to make up a body assembly are shipped knock-down and may be readily assembled in any local body shop. To serve customers within a radius of about 100 miles of Delphos, Gramm will do the assembly in their plant.

An important feature of the Unisteel body is complete interchangeability of major sections and details. Consequently, in the event of collision damage or for any other cause, any section can be readily removed and replaced at small cost.

In inside dimensions, Unisteel bodies come in 12, 14, and 16-ft. lengths and in 83 to 90 in. width; height at eaves with standard floor is 72 in. Floors are of 7/8-in. oak, shiplapped, fastened to sills with self-tapping screws. The body consists of six major fabricated assemblies—roof, floor, sides, rear, and front panels. The roof is an assembly of galvanized sheets, lock-seamed, coin-pressed and riveted on the radius.

A variety of doors is available, including street or curbside doors, 36 x 69 in.; standard narrow rear, 39 x 69 in.; full-width rear, 80 x 69 in., and single wedge-type refrigerator door, 39 x 69 in. Tailgates are available in 24, 30, and 36-in. heights and in standard length of 82 3/8 in.

ICC clearance lights and reflectors are furnished, all wiring being fully enclosed.

At assembly the side panels are bolted to the front panel and rear door section and bolted directly to the steel floor sub-frame. The roof is bolted to the top of all body sections at the cap rail.

In detail, the body sub-frame has sills of formed U-section. Body corners are of high tensile steel section formed on 5-in. radius. Body metal is of cold rolled stretcher leveled steel with all joints lapped and sealed. The roof is fitted with formed section steel roof bows on approximately 24-in. centers.

Approximate weight of a 12-ft. body with full width and length rear doors is 1930 lb.

Bulk Cement Trailer

ALSO just announced by Gramm is a new trailer specially designed for hauling bulk cement or other light granular materials. The trailer's basic principle is that of aeration of

(TURN TO PAGE 148, PLEASE)

You've been hearing a lot about truck production problems...

"Recommend Studebaker trucks highly for performance under load"

"Drivers tell me they ride easier and handle easier"

but have you noticed what Studebaker trucks are doing?

"Our Studebakers average more miles per gallon than our other trucks"

They're 'way up in production ...'way up in registrations ... many times ahead of Studebaker's best pre-war record!

"Other trucks in same price range cost us much more to run"

Is it any wonder that Studebaker is the new "big name" in trucks?

"More economical in mountain country than any other truck we operate"

"Our Studebakers have reduced our costs an average of 17% per truck"

"Our Studebakers out-pull our other trucks"

STUDEBAKER

Builder of trucks you can trust

The Studebaker Corporation, South Bend 27, Indiana, U.S.A.

LAUGH IT OFF

The tank fleet operator's wife was engaged in a very heated bridge game with three other high society women. The stakes were large and the players were concentrating on their hands when the colored maid in the trucking man's household edged over to her mistress.

"Mrs. Smith" she said, "It's four-thirty which is time for your bath."

Still keeping her eyes on the cards, the mistress turned to the maid, "Really, Gloria, I can't leave the game just now. We must pass up my bath today."

"But, Mrs. Smith," objected the maid, frowning, "this is the twelfth day you have passed it up."

C C J

SHOP FOREMAN: "OF COURSE, YOU REALIZE, DARLING, THAT FOR BUSINESS REASONS OUR ENGAGEMENT MUST BE KEPT SECRET."

SHE: "OH SURE. I TELL EVERYBODY THAT."

C C J

Willie Wilson, the colored night watchman at Fleety-Fleet Express heard strange noises in one of the darkened front offices. Deciding to investigate, he approached the room and called: "Who's there? Come out with your hands raised so I can see who you is—or if you don't, I'll come in and see who you was."

C C J

The small truck line had been purchased from its happy-go-lucky founders by one of the large Class I carriers. All week long the office force of the small line had been combing out of its collective hair, delegation after delegation from the new owner's general office. They were plenty burnt up. Questions, questions, questions—all day long. Just when things had quieted down a little and the last "home office" man had been sent packing, a wire came advising them that the firm's General Efficiency Expert would arrive on the morrow. Fed up with the whole thing, the efficiency man was given a frigid welcome.

"What do you do here?" he asked the first clerk. "I don't do a thing!"

The efficiency expert nodded, made a note, then asked the second clerk, "And you, what's your job here?" The second clerk, also hoping to put the quizzer in his place, replied: "I don't do a thing either."

"Hmmm," said the expert, "duplication!"

Rastus: "Dat widow woman Ah married has 10 chilluns and ebery one of 'em plays a musical instrument."

Festus: "A regular band, huh?"

Rastus: "Yeah, and Ah sho' wish Ah was dis-banded."

C C J

"Sister," said the deacon severely, "you should avoid even the appearance of evil."

"Why, what do you mean?" asked the woman anxiously.

"I observe," he said, "that you have on your sideboard several cut glass decanters, and that each is half-filled with what appears to be ardent spirits."

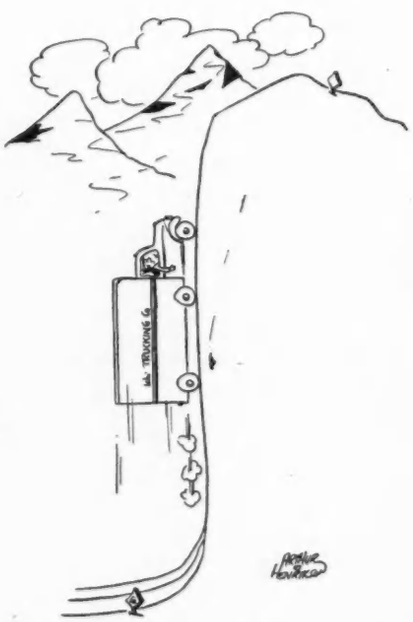
"But deacon," she protested, "it isn't anything of the kind. The bottles look so pretty on the sideboard that I fill them half-way with a mixture of floor-stain and furniture polish, just for the sake of appearances."

"That's why I'm cautioning you, sister," said the deacon. "Feeling a trifle faint, I helped myself to a dose from the big decanter in the middle."

C C J

Shop Foreman: "Did you call that ex-fortune teller I hired as a mechanic last week and ask him when he was going to report for duty?"

Secretary: "Yes, boss. He said it would cost you a dollar to find out."



"Sure-treaded little trucks — aren't they!"

The traffic manager's wife walked into her husband's private office, unannounced. She discovered her busy husband eating his lunch at his desk—while his beautiful secretary was parked on his lap.

"Charley!" stormed the wife. "What is that girl doing on your lap?"

The guilty T. M. almost choked on a chicken leg. He pointed to the food.

"I had to do something, darling," he alibied. "The waiter forgot to bring up a napkin and I just had to have some protection for my new suit!"

C C J

ASKING A WOMAN HER AGE IS LIKE BUYING A SECOND-HAND CAR:

THE SPEEDOMETER HAS BEEN SET BACK, BUT YOU CAN'T TELL HOW FAR.

C C J

Son: "Daddy, what are ancestors?"

Rate Clerk: "I'm one of your ancestors and so is grandpa."

Son: "Then why do people brag about them?"

C C J

Secretary: There is an applicant waiting to see you who says that he used to make his living sticking his arm into a lion's mouth."

Personnel Mgr.: "What's his name?"

Secy.: "Lefty."

C C J

He went on a fishing trip and returned with a wife.

"That's a fine girl you've got," said his friends.

"Yeah, but you should have seen the one that got away."

C C J

Jim Dandy, the trailer switchman, says he and his little woman certainly have done a lot of worrying because they haven't had any children.

"It's really serious," says Jim. "We've spent many a sleepless night over it."

C C J

The young husband had just obtained a new position with a big mid west trucking operator. A few weeks later he wrote home from his new assignment saying: "Made a foreman—feather in my cap." A short while later he wrote again, saying: "Made manager—another feather in my cap." After some weeks he wrote again, saying: "Fired—send money for train fare."

His wife unfeelingly telegraphed back: "Use feathers and fly home."

Resume work

New Lindsay Bodies—recently added to the fleet of Borden's Farm Products Division of the Borden Company
Built by Truck and Trailer Industries Inc., New York City

7 Good Reasons

why More Fleets specify Lindsay Bodies

"Jim," a neighbor of yours, was chosen an LS Body Builder because of his ability to handle your requirements intelligently—whether you need one or a thousand truck bodies.

Your "Jim" can design a body to meet your exact requirements—make speedy deliveries and a quick factory repair job.

1. **EASE OF REPAIR.** A Lindsay body can be repaired quickly—damaged panels easily removed—replacements available from warehouse stocks.

2. **NATION-WIDE SERVICE.** There are 207 authorized Lindsay Body Builders, thus, you can get complete factory service on any Lindsay body any place in the country. Your branch offices can also buy new bodies locally and know that they conform to your standard specifications.

3. **SPEED OF DELIVERY.** Lindsay bodies—one or a hundred—are built in record time. This modern method of assembly is ideal for line production.

4. **STRENGTH AND SAFETY.** LS has an amazingly high strength-weight ratio. Your Lindsay body withstands wear—saves weight, increases payload.

5. **APPEARANCE.** The rugged beauty of LS is adaptable to your individual design requirements.

6. **UNIFORMITY.** Units in your fleet can be identical yet built in entirely different parts of the country.

7. **EXPERIENCE.** Lindsay bodies stand the test of actual service. The strongest and most frequently heard reason given for the purchase of Lindsay bodies last year was—"We've used them before." Let us tell you all about Lindsay bodies.

The Lindsay Corporation, 1724 25th Ave., Melrose Park, Ill.
Sales Offices: Chicago, New York, Atlanta, San Francisco

LINDSAY LS STRUCTURE

U. S. Patents 2017629, 2263510, 2263511
U. S. and Foreign Patents and Patents Pending

DISTRIBUTORS AND BUILDERS IN ALL PARTS OF THE COUNTRY

DETROIT DISPATCH

Truck Prices Up Again

No Separate Ford Franchises

Fleet Resales Squelched

Four Engines for Ford

Heavy-Duty Demand Eases

AFL Fights Front Brakes

by LEN WESTRATE
CCJ Detroit News Editor

Truck Prices Up Again

With two major truck manufacturers already announcing higher prices, can competitors be far behind? Chevrolet increased its prices from $26 on light-delivery models to $162 on a heavy-duty model equipped with an optional body, coincident with its new model introduction. Ford a few days later announced that it was adjusting truck prices, increasing some as much at $98, although others were reduced as much as $17. The price differential now separating V-8 and six-cylinder trucks has been reduced from $58 to $30. GMC Truck and Coach has announced a new model, but late in July still was trying to determine costs. Guessing in Detroit was that when new price tags were announced they would be higher than had prevailed previously. Introduction of new models apparently has had some effect on the price of used trucks. One large truck dealer in Detroit says that 1946 models are down 20 to 30 per cent. He believes that improvements in new truck models already announced is causing prospective buyers of used trucks to take a second look at high price tags on used vehicles. Prices have slipped most on large trucks of 2½ tons and up. Principal reasons are that the new truck market in the large sizes is going soft, that many of the army surplus trucks thrown on the market were heavy-duty jobs, and that road building and other activities requiring the heavy-duty models is particularly slow.

Fleet Resales Squelched

Operators who buy cars and trucks under a fleet agreement can thank the manufacturer for being able to continue fleet purchases in the present buyers' market. One large company, selling both cars and trucks, says that it insists dealers take care of fleet business although many of them did not particularly want to since they could sell all vehicles they can get at regular prices. All companies report they are taking on very few new fleet accounts since each new one added reduces the amount for established customers. They report that there is some conniving between dealers and individuals who normally would not be fleet customers but who signed an agreement in the belief that they thus will be able to expedite delivery. The manufacturers also report that they have been having a little trouble with resales of cars bought by individual employes under the fleet agreement. In some cases, employes who have obtained cars under their employer's fleet contract and then resold them at a large profit have been fired.

Four Engines for Ford

Ford is reported to have practically completed redesign of its six-cylinder engine which is said to have a compression ratio of seven to one. The engine is said to develop in the neighborhood of 100 h.p. and probably will be introduced with the new Ford truck late this year. It is thought likely that Ford will push the six in its new model passenger car next year, with the V-8 optional. Ford also is developing an improved V-8 for the Mercury and a new V-8 for the Lincoln.

No Separate Ford Franchises

From time to time reports crop out that Ford is planning to set up separate truck franchises when its new heavy-duty model appears, probably late this year. A check with the company reveals that no such division is contemplated but that in cases where a dealer has considerable truck business he is urged to set up separate sales and service facilities preferably in an entirely separate building. In some cases the truck operation may be in a different part of town from that occupied by the passenger car setup. However, the ownership remains under the one dealer.

Take on a Payload

Are used truck prices up or down?
How bad is the gas shortage?
Are fleetmen making sharp trades?
What new car is on the far horizon?

Read This
DETROIT DISPATCH

Heavy-Duty Demand Eases

There are definite signs of a softening in demand for heavy-duty model trucks such as cab-over-engine jobs. Demand is said to be spotty, varying with different parts of the country. One ton and 1½ ton models and panels and pick-ups still are in very strong demand everywhere.

Detroit Dispatch

A large Detroit operator reports that he has been having much less trouble getting new trucks in the last couple of months than he had since the early days of the war. He says that while it is a little easier to get delivery he still has not been able to do any particularly sharp trading as yet, particularly on medium and light models. He also reports that while some repair parts are easier to obtain certain types such as transmission and rear axle parts are particularly tough.

AFL Fights Front Brakes

Organized labor has voiced vigorous opposition to use of front wheel brakes on trucks, particularly in the Northwest. A spokesman for the Oregon Local of AFL told ICC bluntly that drivers in his area refused to operate front-wheel brakes and blocked them off. He said that if the rule should be included, it could not be enforced. He urged the Commission to make tests on front-wheel brakes and asked that it not attempt to tell manufacturers how to design their vehicles.

Gas Tension Eased

The hubbub and furore raised in Detroit last month over the possibility of large fleet operators being cut off from supplies of gasoline during the summer months proved pretty much of a dud. The operators now say that they will get enough to operate during the expected shortage.

Special Equipment Show

Special equipment shows apparently have become quite a vogue around Detroit. The latest was held by Dodge dealers and included 217 special bodies mounted on chassis. They ranged from small pickups

(TURN TO PAGE 164, PLEASE)

9 REASONS WHY IT PAYS TO BUY TRUCK BODIES BY FRUEHAUF

1. 12 - 14 - 16 ft. sizes available in hundreds of combinations.
2. Durable, all-steel Aerovan-type construction, including doors.
3. Exceptional strength—yet light in weight.
4. Side and rear door design to fit user's need.
5. Heavy-duty Trailer-type cam door locks.
6. Fruehauf's famous steel-ribbed reinforced 1-1/16 inch flooring.
7. Available with open or closed tops—one-piece, reinforced roof coving.
8. Fruehauf nation-wide Factory Branch distribution centers relieve you of all assembly and mounting work. Also available in K. D. form.
9. Top-quality construction—at production-line prices!

YOU know what the name "Fruehauf" means on a Trailer—now, you can buy the same engineering skill in a top-quality Truck Body at a production-line price. With 4-basic models and hundreds of combinations to choose from, you'll find it easy to select the exact body you need from the Fruehauf line.

There's a Fruehauf Factory Branch right in your locality which stocks these models and backs sales with Factory Branch Service facilities. This eliminates costly layups should servicing be necessary.

See these tailor-made bodies now on display at your nearest Fruehauf Branch!

*Base price 12-ft. van body less doors, K. D. Assembly and mounting on truck chassis ready for finish paint, $50. additional. Taxes extra.

SPECIFY FRUEHAUF
The Name that Carries Weight!

BODY DIVISION
FRUEHAUF TRAILER CO. • DETROIT 32
69 Factory Service Branches

4 Basic Models ... Hundreds of Combinations!

FRUEHAUF TRUCK BODIES

WASHINGTON RUNAROUND

ICC Revisions Stymied
Synthetic Dilemma
Refrigerated Transport Probe

Tax Free Spirits Curbed
Hope for Tax Cut in '48
Highway Boondoggle

ICC Revisions Stymied

Unless the ICC takes an arbitrary attitude in regard to its proposed revision of the motor carrier safety regulations the original draft will undergo drastic changes as a result of the criticism offered at the series of informal conferences with carrier groups and manufacturers which were concluded late in July. The ICC Motor Carrier Section of Safety is now working on a draft incorporating some of the ideas advanced at the conferences. It hopes to have this draft, which will be used as a basis for public hearings, ready for discussion sometime in October.

Synthetic Dilemma

The nation's war-built synthetic rubber industry will continue to stagger along under interim legislation until the 80th Congress convenes its next session in January 1948. Legislation will be written at that time calling for the compulsory consumption of a minimum amount of synthetic rubber in order to assure continued operation of the plants. Determination as to what products will contain synthetic rubber will probably be left to the industry, since there is a clear cut desire to keep the government out of the business. However, rubber experts here feel that some quantity of synthetic will be used in small-size tires indefinitely as well as in certain technical automotive products.

Refrigerated Transport Probe

Formation of a Research Committee on Refrigerated Motor Transport has been agreed to as a result of a meeting between officials of the Department of Agriculture, American Trucking Associations and the Truck-Trailer Manufacturers' Association. The initial objective will be to collect information on the present motor transport equipment available in order to determine the refrigerating efficiency and relative performance under normal conditions of such equipment. Particular attention will be paid to equipment for intense refrigeration, i.e., handling of frozen food products at approximately 0°, and to moderate refrigeration suitable for handling fresh foods at temperatures ranging between 32° and 45°.

by GENE HARDY
CCJ Washington Bureau

Tax-Free Spirits Curbed

The Bureau of Internal Revenue has terminated the wartime provisions of its regulations which permitted the transportation in tank trucks of tax-free alcohol and tax-free distilled spirits. In amending its regulations the Bureau strengthened the requirements for the transportation in tank trucks of denatured alcohol and authorized the transportation in tank trucks of butyl alcohol, acetone, ether and fusel oil produced by industrial alcohol plants.

Trailer Output Low

Notwithstanding industry predictions to the contrary, truck-trailer production continued its downward slide during April and May. Production has declined steadily since February of this year, and in April totaled 5277 units, a drop of 11 per cent from the 5942 units produced in March, according to the Census Bureau. May output dropped to 4646 units, the lowest monthly total since February 1946. The primary reason for the production drop is the fact that the backlog of orders has been filled and the industry is now faced with a job of salesmanship in regard to new business as well as replacement orders.

Hope for Tax Cut in '48

Despite one of the most concerted campaigns ever waged by automotive interests Congress took no action on the industry's pleas to repeal Federal excise taxes on motor vehicles and trailers, gasoline and lubricating oil, tires and tubes, and automotive parts and accessories. However, there have been some indications as to what action will be taken in regard to excises in the general tax bill which will be introduced when Congress reconvenes next January. While there has been some talk of increasing excise rates, Chairman Knutson of the powerful tax-originating House Ways and Means Committee has let it be known privately that the bill will probably cut most existing excise taxes back to pre-war rates, which would mean a 50 per cent cut generally. Certain emergency excises might be eliminated entirely, but it is not likely that the major automotive levies will be dropped.

In addition, it is expected that the excise tax structure will be broadened to include more items. This sort of provision has received strong backing in business circles as well as in Congress.

Gas Consumption Tops '41

Motor vehicle consumption of gasoline in the United States in 1946 amounted to 25,649,000,000 gal. as compared with a total of 24,192,000,000 gal. consumed in 1941, the previous peak year, according to data compiled by the Public Roads Administration. California led all states with New York, Pennsylvania and Texas close runner-ups.

Motor trucks traveled 56,146,000,000 miles, and passenger vehicles, including taxis and buses, 284,509,000,000,000 miles.

Farm Trucks Aging

More than one-third of all farm trucks were 10 years old or over in 1945 according to the results of the 1945 Census of Agriculture recently released by the Bureau of the Census. More than 14 per cent of these trucks were 1930 or earlier models. Only one out of every four trucks on farms in 1945 were 1940 or later.

Highway Boondoggle

Completion of the Inter-American Highway has been given an almost killing setback by the recent report of the Senate National Defense Committee. The committee found that the highway is not yet half finished, has already cost more than the original estimates, probably follows the wrong route, and that its commercial possibilities are extremely doubtful.

Scheduled for completion in 1943, the highway has been an outrageous boondoggle, according to the committee, having cost the United States to date $122,000,000 as compared with original estimates of $20,000,000. It will require at least another $17,000,000 to complete the project.

The War Department was saddled with the major blame for this wasteful project.

(TURN TO PAGE 164, PLEASE)

Convert Truck, Tractor and Bus Brakes to AIR!

Air Brake KITS MAKE IT EASY AND ECONOMICAL

Wagner Air Brake Kits come to you complete. Each kit contains all parts, connections and brackets, as well as simple, easy-to-follow installation instructions enabling you to convert the braking system of all types of heavy-duty vehicles to air quickly and easily.

Hundreds of truck operators and fleet owners have already converted their rolling equipment with Wagner Air Brakes and report added safety, economy and pay-load profits.

Remember, Wagner Air Brakes have the famous Rotary Air Compressor. It mounts right under the hood and is belt-driven direct from the engine to give highest efficiency.

Write today for complete information on Wagner Air Brake Kits. Ask for Bulletin KU-50B, addressing your request to Wagner Electric Corporation, 6470 Plymouth Avenue, St. Louis 14, Mo.

Wagner Electric Corporation EST. 1891

LOCKHEED HYDRAULIC BRAKE PARTS and FLUID
COMAX BRAKE LINING • AIR BRAKES • NOROL
TACHOGRAPHS • ELECTRICAL PRODUCTS

The System With The Rotary Compressor

K47-3A

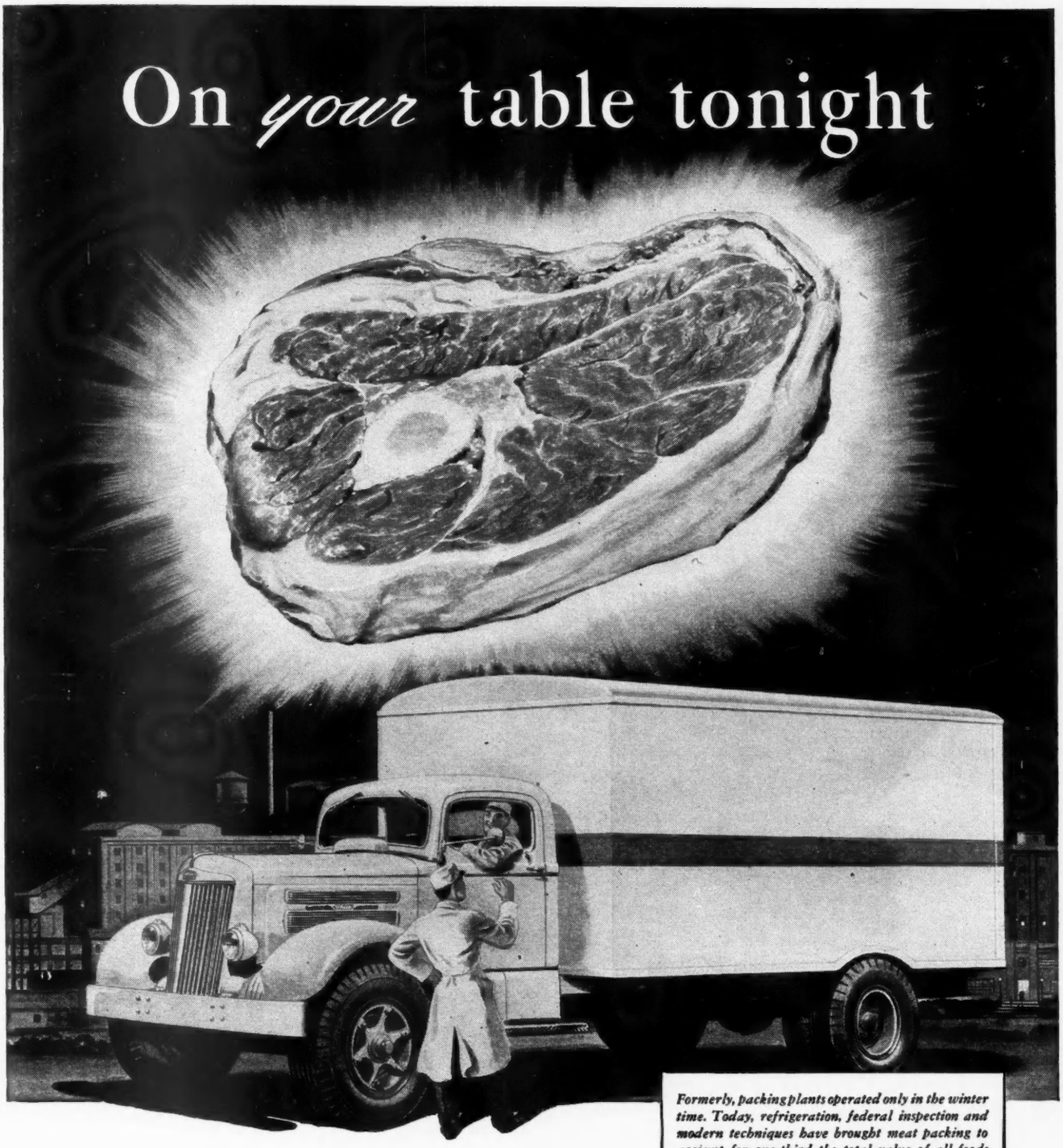
New Truck Registrations by Makes and States*

May and Five Months of 1947

STATE		Auto-car	Brock-way	Chev-rolet	Dia-mond T	Divco	Dodge	Fed-eral	Ford	FWD	GMC	Inter-na-tional	Mack	Osh-kosh	Reo	Ster-ling	Stude-baker	Ward La France	White	Willys	All Others	Total
Alabama	May	1		257	8		197	9	312		85	167	5		21		44		15	84	8	1,213
	5 Mos.	3		2,249	40	10	1,013	37	1,797	1	486	961	32		138		228	1	81	438	37	7,552
Arizona	May			78		1	52	1	102	1	33	41			10		32		9	33	2	395
	5 Mos.	4		401	8	2	203	10	396	1	122	128	1		47	2	91		20	102	19	1,557
Arkansas	May			671	16		317	6	585		145	252	5		23		81		11	183	5	2,310
	5 Mos.			2,380	45		900	17	2,052		428	749	11		48		289		40	395	13	7,367
California	May	38	7	984	43	14	875	14	1,211	10	350	651	45		56	16	299		45	188	103	4,929
	5 Mos.	176	26	6,089	190	142	3,298	59	5,085	87	2,015	2,710	111		273	46	1,446	1	214	764	377	23,109
Colorado	May	4		94	12	2	104	3	223	4	55	118	8		14		23		7	52	2	725
	5 Mos.	10		860	54	19	482	19	1,042	46	243	534	21		52		174		29	188	23	3,796
Connecticut	May	16	11	114	15	10	103	10	149	1	55	116	29		15	1	36		22	35	6	744
	5 Mos.	104	68	830	55	30	481	60	559	7	215	497	114		60	3	16		80	132	41	3,502
Delaware	May	1	3	36	2	8	46		67		26	34	1		3		14	1	2	7	2	253
	5 Mos.	12	13	295	8	9	237	1	302	1	85	169	9		10		50	1	15	32	7	1,256
Dist. of Col.	May	1	1	38	6	10	41		59		34	23	2		3		8		2		2	230
	5 Mos.	3	11	311	25	61	233	5	321		121	171	19		19		46		24	5	7	1,382
Florida	May	6		413	13	5	171	4	325	1	60	130	13		23		80		11	25	11	1,291
	5 Mos.	22		2,255	62	8	811	35	1,775	21	355	697	79		97		275		80	271	35	6,878
Georgia	May		1	841	26	3	507	9	1,055		191	415	27		58		132		42	168	9	3,484
	5 Mos.	6	2	2,455	74	8	1,328	27	2,654	1	497	919	71		142	1	321		130	353	27	8,916
Idaho	May			116	4	2	48		71		28	75	2		3		26			47	4	426
	5 Mos.			679	20	4	239	10	450	1	143	301	4		29	1	127		5	129	26	2,168
Illinois	May	28	4	773	101	46	517	21	1,002		234	646	33		82	3	149		51	4	38	3,732
	5 Mos.	150	42	6,045	511	169	3,249	111	4,943	7	1,332	2,933	147		421	8	1,000	2	308	474	202	22,054
Indiana	May	3	10	307	33	15	307	17	484	4	144	388	11		43		148		41	160	16	2,131
	5 Mos.	24	78	2,245	177	78	1,566	67	2,288	8	716	1,601	76		226		763		167	449	103	10,632
Iowa	May			248	29	6	238	5	438		104	268	4		29		95		16	121	4	1,605
	5 Mos.	3	2	2,120	117	21	1,152	25	2,056	6	382	1,204	59		147		449	1	67	532	34	8,377
Kansas	May	4		291	23	3	154	10	505		74	227	5		20		127		14	76	8	1,541
	5 Mos.	7	1	2,323	93	19	774	53	1,981	1	363	1,011	12		100		492		71	163	32	7,496
Kentucky	May	3		351	14	5	235	8	389		125	207	6		22		58		18	64	15	1,520
	5 Mos.	11		1,726	55	13	938	37	1,550		422	937	34		109		272		61	379	36	6,580
Louisiana	May			290	16		189	3	286		59	163	5		18		59		19	90	3	1,200
	5 Mos.	9		1,563	50	2	795	18	1,294		282	612	40		62		298		67	227	13	5,332
Maine	May		3	307	3	5	203	10	331	2	87	200	14	3	26	3	59	1	14	122	13	1,406
	5 Mos.	18	13	872	13	10	509	29	1,005	7	232	474	59	7	54	6	148	1	49	169	33	3,698
Maryland	May	8	8	242	7	13	204	12	326		69	154	23		19		49	3	20	43	9	1,209
	5 Mos.	37	50	1,459	29	54	826	47	1,182		346	702	84		128		213	14	85	162	31	5,447
Massachusetts	May	15	16	145	13	30	119	3	198	1	59	100	24		13	7	36		22	55	9	865
	5 Mos.	37	40	730	47	71	489	16	809	1	194	350	87		60	16	100	1	61	144	17	3,270
Michigan	May	20	3	729	37	31	738	74	988		245	443	13		105	1	164	4	60	192	38	3,885
	5 Mos.	52	16	3,391	158	151	2,664	234	3,809	1	875	1,347	54		401	1	615	13	140	630	153	14,705
Minnesota	May	11		131	19	4	253	11	273	3	69	250	9	2	27		123	2	59	92	14	1,352
	5 Mos.	21	2	1,974	96	35	1,127	58	1,868	20	379	1,116	52	4	68		357	10	131	206	39	7,563
Mississippi	May			315	8		178	2	346		82	117	5		11		51		8	108	4	1,235
	5 Mos.	2		2,191	37	2	846	21	1,709		353	611	16		56		248		49	430	12	6,583
Missouri	May	5	4	498	19	8	302	10	560		119	361	15		28		64		33	118	15	2,159
	5 Mos.	16	5	3,655	120	50	1,573	55	2,793	3	660	1,466	50		132		504	1	117	424	52	11,676
Montana	May			192	2		82	3	171		47	88			8		44		7	108	4	758
	5 Mos.			909	31	3	458	7	721	2	170	411	1		31		191		18	350	21	3,323
Nebraska	May	1		127	16	1	149	2	241	8	70	170	4		18		63		28	78	7	983
	5 Mos.	4		1,147	95	1	665	25	1,192	12	267	767	54		73		276		104	340	15	5,037
Nevada	May	1		15		1	22		27	3	5	20			3		6		1	4	1	109
	5 Mos.	4		119	3	2	79	1	123	4	41	83			10	1	33		2	33	9	547
New Hampshire	May	1		54	3	1	47	3	60		11	28	13		7	1	9		5	14		257
	5 Mos.	18	6	406	21	8	311	12	399		102	210	60		58	13	97		39	193	15	1,878
New Jersey	May	34	70	458	30	43	310	14	454	6	177	295	66		31	3	127	6	59	83	16	2,282
	5 Mos.	184	225	2,114	115	112	1,188	72	1,779	9	613	1,042	274		98	3	374	26	188	259	83	8,756
New Mexico	May			205	11		97	4	113		42	73	5		6		38		6	45	1	649
	5 Mos.			680	31		281	9	391	5	150	205	17		16		107	1	19	84	7	2,003
New York	May	82	110	509	84	20	664	34	736	11	296	496	180	4	84	3	128	8	111	96	36	3,690
	5 Mos.	496	730	5,188	452	186	4,072	242	4,814	61	1,610	3,050	871	38	482	44	947	108	636	827	289	25,193
North Carolina	May	5	1	745	19	2	498	15	669		84	258	40		73		136		37	217	7	2,806
	5 Mos.	25	8	3,230	63	17	1,440	71	2,450	9	341	914	126		239		486	1	157	556	45	10,178
North Dakota	May			18	1		25		50		5	33	3		3		8		1	21		168
	5 Mos.	2		354	11		195		348	3	62	224	8		17		92		5	92	2	1,415
Ohio	May	10	2	791	33	30	565	30	830	1	330	519	50		73		162	3	103	135	45	3,713
	5 Mos.	129	36	4,091	199	183	3,120	166	4,309	17	1,334	2,567	278	1	407		828	10	516	998	203	19,392
Oklahoma	May	1		275	14	9	283	4	436		102	283	5		29		64	1	21	67	8	1,602
	5 Mos.	1		1,971	26	16	1,115	21	1,784	5	383	1,011	38		89		311	1	72	248	23	7,115
Oregon	May	5		174	33		165	7	213		89	111	11		16		74		27	92	9	1,026
	5 Mos.	13		1,404	122	20	798	53	1,018	4	399	601	32		65	8	353		77	350	54	5,389
Pennsylvania	May	53	66	723	65	17	719	34	966	1	325	638	108	5	93	8	210		99	184	24	4,318
	5 Mos.	292	373	4,634	295	82	3,691	188	4,481	28	1,367	3,071	425	27	454	43	1,022	37	525	754	143	21,932
Rhode Island	May	11		64	3	15	42	1	70		25	33	9		1	1	16	2	6	6	1	306
	5 Mos.	48	4	400	16	44	190	5	315	2	111	137	29		11	4	59	2	23	40	11	1,451
South Carolina	May	1		217	7		182	4	289		48	98	14		24		64		16	68	4	1,034
	5 Mos.	3		1,370	24		770	14	1,272		225	409	35		107		207		71	283	38	4,828
South Dakota	May	1		91	14		96	3	102	1	39	142	4		14		37		5	90		639
	5 Mos.	6		450	37		375	6	490	7	136	385	13		44		109		16	233	6	2,313
Tennessee	May			359	7		286	16	468	2	144	203	18		25		72		20	126	21	1,767
	5 Mos.	10	14	3,497	72	24	1,723	117	2,668	16	956	1,415	93		184	3	483	2	151	656	83	12,147
Texas	May		1	956	26	20	645	8	1,027		216	645	27		67		221		64	218	20	4,161
	5 Mos.		6	6,024	121	62	3,232	45	5,147	4	1,124	2,627	150	1	262		978	1	349	913	94	21,140
Utah	May			55	1	6	44	7	67	1	21	57	3		2		20		2	24	4	314
	5 Mos.			556	17	19	242	20	475	9	142	302	8		6	1	120		16	103	31	2,067
Vermont	May	3	3	59	7	3	86	2	126	1	37	79	16	1	24	2	19	2	9	32	6	517
	5 Mos.	8	14	338	18	6	281	14	425	5	106	235	39	3	75	5	50	6	20	187	15	1,850
Virginia	May	6	3	509	14	10	280	5	601		81	252	17		30	1	74		31	105	8	2,027
	5 Mos.	57	30	2,476	72	34	1,157	42	2,482	9	434	921	58		137	1	311		113	349	62	8,745
Washington	May	2		174	16	8	135	1	261	4	71	151	11		21	2	67		4	57	31	1,016
	5 Mos.	12	1	1,411	90	32	797	7	1,426	11	421	668	34		89	10	405		28	249	83	5,774
West Virginia	May	1	3	200	5	2	166	8	207		53	84	2		12		36	1	17	68	4	869
	5 Mos.	10	48	966	42	20	779	45	992	30	281	505	19		82		182	4	61	330	27	4,423
Wisconsin	May	6		409	36	16	227	3	396	7	116	269	11	4	33	6	81		44	93	5	1,762
	5 Mos.	25		2,418	139	79	1,101	39	1,771	60	507	1,123	48	23	169	19	320	2	165	313	52	8,373
Wyoming	May			41	6		38	2	73		12	45	4		4		14		7	53		299
	5 Mos.			358	20	3	182	5	367	2	48	201	8		11		70	2	25	167	8	1,477
Total	May	388	330	15689	920	425	11952	452	18939	73	4,978	10616	925	19	1,373	58	3,745	34	1,271	4,112	602	76,901
	5 Mos.	2,074	1,864	95608	4,216	1,921	53875	2,277	85357	534	22576	45284	3,950	104	6,091	239	17063	249	5,537	16015	2,788	367,622
Total	April	467	425	22189	952	485	12256	544	19479	86	4,964	10958	1,009	18	1,323	60	4,013	45	1,251	4,021	603	85,148

* Data from R. L. Polk & Co.

On *your* table tonight



Formerly, packing plants operated only in the winter time. Today, refrigeration, federal inspection and modern techniques have brought meat packing to account for one-third the total value of all foods sold. Meat profits are figured in split-pennies because ingenuity has given value to every bit of by-product.

FROM 5,000,000 FARMS and ranches in every state to more than 3,000 packing plants come the livestock which provides 150 pounds of dressed meat for you and me and each of our neighbors every year. Two-thirds of the supply comes from west of the Mississippi. Two-thirds is consumed east. Because of this geographical quirk and meat's perishability, it takes a daily miracle of distribution efficiency to put meat on our tables tonight and every night.

Thousands of Super Power Whites are used in all phases of livestock and meat distribution—from farm to packing plant, to store, to home. Correctly selected, properly maintained and skilfully manned, they are precision tools of transportation. These three factors are the basis of the cost-reducing Continuing Control System of Truck Management, which our White Representative will gladly explain in terms of your own needs.

White

THE WHITE MOTOR COMPANY

Cleveland, Ohio, U. S. A.

THE WHITE MOTOR COMPANY OF CANADA, LIMITED
Factory at Montreal

FOR MORE THAN 45 YEARS THE GREATEST NAME IN TRUCKS

CCJ NEWSCAST

NEW IHC ENGINE CONVERTIBLE FOR GASOLINE OR DIESEL USE

International Harvester Co. has announced the development of a new engine which is convertible in production for either gasoline or diesel fuels. The new engine is comparable in size to the "4" series gasoline engine now used in International's farm tractors and is expected to meet the demand for a small lower-priced diesel for both truck and industrial uses.

The major feature of this new engine from a production standpoint is that it will enable the company to produce both gasoline and diesel engines on the same assembly line, thereby increasing production and reducing costs. The basic structure for both engines is the same up to the division point between the crankcase and the cylinder head, with 75 per cent of the parts interchangeable. High compression cylinder head modified manifold and fuel injection system will be used on the diesel model.

It is estimated that production will not get under way for the next 18 to 24 months.

ASKS "REASONABLE RETURN"

Robert A. Nixon, motor carrier rate aid in the U. S. Department of Agriculture insisted last month that trucking rates should be based on the rate of return on investment rather than upon the relationship between expenses and revenues. He was speaking before the annual convention of the National Association of Railroad and Utilities Commissioners. Carriers on the other hand have long argued that rates based on "reasonable return" would so narrow the profit margin as to make the business extremely hazardous.

Later in the month John V. Lawrence of ATA testified before a Senate Judiciary committee that motor carriers need an operating ratio of 90 per cent or less leaving at least 10 per cent for taxes, operating surplus and reasonable profit.

NEW RECORD FOR ASI SHOW

More than 450 applications for a total of approximately 145,000 sq. ft. of exhibit space at the Automotive Service Industries Show (Navy Pier, Chicago, Dec. 8 to 13) have been received to date. Thus topping of last year's record show (430 exhibitors in 127,000 sq. ft.) is already assured.

BELL SYSTEM FLEET FACTS

More than 60 per cent of the 30,000 vehicles which make up the Bell System fleet are ½-ton trucks, and about one-fifth are passenger cars. The balance range from ¾-ton to 32,000 lb. with correspondingly heavier tractor-trailers.

DATES & DOINGS

AUG. 21-23—West Coast Transportation & Maintenance Meeting, Society of Automotive Engineers, Biltmore, Los Angeles, Calif.
SEPT. 1-3—Mississippi Transport Assn. Convention, Buena Vista Hotel, Biloxi, Miss.
SEPT. 5-7—Maine Motor Vehicle Assn. Annual Convention, Rangeley Sheraton, Rangeley, Maine.
SEPT. 5-7—North Carolina Motor Carriers Assn., Inc., Annual Convention, Mayview Manor Hotel, Blowing Rock, N. C.
SEPT. 8-12—Fleet Supervisor Training Course, The Pennsylvania State College, State College, Pa.
SEPT. 10-11 — Tennessee Motor Transport Assn. Annual Convention, Andrew Jackson Hotel, Nashville, Tenn.
SEPT. 12-13—Michigan Trucking Assn. Convention, Park Place Hotel, Traverse City, Mich.
SEPT. 12-13 — West Virginia Motor Truck Assn. Annual Convention, Daniel Boone Hotel, Charleston, W. Va.
SEPT. 15-16—Wisconsin Motor Carriers Assn. Annual Meeting, Alpine Resort—Egg Harbor —Door County, Wis.
SEPT. 15-19—Fleet Supervisor Training Course, University of Minnesota, Minneapolis, Minn.
SEPT. 19-20 — Kansas Motor Carriers Assn., Inc., Convention, Kansas Hotel, Topeka, Kan.
SEPT. 22-26—Fleet Supervisor Training Course, University of Nebraska and University of Omaha, Lincoln, Nebr.
SEPT. 25-27—Indiana Motor Truck Assn. Convention & State Rodeo, Claypool Hotel, Indianapolis, Indiana.
SEPT. 29-OCT. 3—Fleet Supervisor Training Course, University of Kansas, Lawrence, Kansas.
OCT. 1-3—Florida Trucking Assn., Inc., Convention, McAllister Hotel, Miami, Fla.
OCT. 16—Motor Carrier Assn. of New York Annual Convention, Waldorf-Astoria Hotel, New York, N. Y.
OCT. 20-24—Fleet Supervisor Training Course, New York University, New York, N. Y.
OCT. 26-30—American Trucking Associations, Inc., Annual Convention, The Biltmore, Los Angeles, Calif.
OCT. 27-31—Fleet Supervisor Training Course, Ohio State University, Columbus, Ohio.
NOV. 5-7—American Society of Body Engineers Annual Technical Convention, Rockham Memorial Bldg., Detroit, Mich.
DEC. 8-13 — Automotive Service Industries Show, Navy Pier, Chicago, Ill.
JAN. 12-16, 1948—Annual Meeting, Society of Automotive Engineers, Book-Cadillac Hotel, Detroit, Mich.
JULY 16-24, 1948 — Road Show, American Road Builders' Assn., Soldier Field, Chicago, Ill.

TRAILER PRICES UP

The Trailmobile Co. has announced that its trailer prices will shortly be raised by from 10 to 12 per cent. In explaining the necessity for this action, Wade T. Childress, company president, pointed out that "since 1941, wages have doubled, materials have increased 35 per cent and our prices are still within 25 per cent of pre-war."

HEAVY FINE FOR FALSE LOGS

According to an ICC report, a fine of $9000 was imposed upon Utah Oil Refining Co. of Salt Lake City last month upon charges of the ICC that the company was knowingly permitting falsification of driver logs. Each of 18 drivers was also fined $25. The ICC report indicated that the false entries, regarding hours of service, represented that drivers were not exceeding maximum daily and weekly hours of service.

STATE LEGISLATIVE ROUND-UP

California has approved a bill for highway construction and improvement and for increased user taxes and fees to help pay for it. It is expected that $64,000,000 annually will be raised by new highway revenues including an increase of 1½ cents in the gasoline tax, increases in truck fees and registrations and a new driver license costing $2 for four years.

Michigan has increased tandem axle weight from 26,000 to 32,000 lb., raised speeds to 45 m.p.h. (except for a specified spring period) for vehicles weighing 5000 lb. or more, increased maximum vehicle height from 12 ft., 6 in. to 13 ft., 6 in. and increased maximum width for equipment engaged in transporting forest products to 104 in. Although the bill to increase gasoline tax from 3 to 4 cents per gallon was vetoed, a straight 5 cent tax on diesel fuel was approved.

Plans for the Interstate Turnpike that would carry the Pennsylvania Turnpike into West Virginia, Ohio and Indiana have obtained legislative approval (for an Interstate Turnpike Commission) in Pennsylvania, and indicated legislative support in Indiana and West Virginia. The Ohio road bill, however, was killed.

New Hampshire has approved a $7½ million toll road bill which will permit state financing instead of private sale of bonds.

DIAMOND T STEPS UP POWER

Diamond T has announced that, effective immediately, power output in four of its popuar models has been increased as follows:

Model 306 from 73 to 91 hp.
Model 404HH from 76 to 92 hp.
Model 509 from 81 to 99 hp.
Model 614H from 95 to 113 hp.

REVENUES UP: RATIO DOWN

Gross revenues for Class I motor carriers during the first quarter of 1947 increased 36 per cent over the corresponding period of 1946 while expenses climbed 30.9 per cent, according to American Trucking Associations, Inc. The ratio of expenses to gross in the 1947 period was 94.5 compared with 98.4 a year ago.

TRUCK OUTPUT RECORD IN APRIL

The final count on new truck registrations for the month of April stood at 85.148, a new all-time record for the industry. Nearly 6000 more new vehicles were delivered than in the previous month. Returns from 46 states to date for May indicate that it will not be quite so high,

(TURN TO PAGE 88, PLEASE)

Wherever Trucks Roll, MIDLAND SERVICE is Near

EACH PIN REPRESENTS A MIDLAND DISTRIBUTOR OR DEALER.

Safe, dependable Midland Power Brakes help materially in profitable truck operation. Your trucks seldom, if ever, will be held up for brake service if you have Midland equipment. But should an emergency occur, competent Midland service is near, to get you rolling with the least possible delay.

Get complete information about Midland Power Brakes, and Midland's famous "Factory Rebuilt Exchange Plan." See your Midland distributor, or write to us in Detroit.

THE MIDLAND STEEL PRODUCTS CO.
6660 MT. ELLIOTT AVE. • DETROIT 11, MICH.
Export Department: 38 Pearl Street, New York, N. Y.

MIDLAND POWER BRAKES

CCJ Newscast

(CONTINUED FROM PAGE 86)

probably around 75,000. Deliveries during the first four months of 1947 reached a final count of 290,721. For full details see page 84.

ATA CHECKS FOR PAYROLLS

American Trucking Associations, Inc., has extended its standardized check forms, which carry slogans of the industry, to include payroll checks. Hitherto they have been available only for accounts payable. For the statistically minded, ATA has figured the 52 checks a year for 3½ million employees multiplied by 16 people seeing each check, plus the accounts-payable checks, will give an annual potential readership of 5,824,000,000.

Domestic Motor Truck Factory Sales by Gross Vehicle Weight*

	5,000 & Less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	Over 26,000	Total
January	25,578	11,103	17,361	15,746	3,259	2,313	2,074	77,434
February	26,051	13,076	19,170	18,150	2,316	2,579	1,934	83,276
March	27,268	16,852	19,358	20,232	3,062	3,254	2,056	92,082
April	24,487	15,978	18,953	14,885	3,582	3,360	2,270	83,515
May	23,532	14,091	17,474	13,028	2,577	2,950	2,044	75,696
June	21,995	10,911	16,320	16,462	2,926	2,837	2,350	73,803
Six Months	148,911	82,011	108,636	98,503	17,724	17,293	12,728	485,806

* Automobile Manufacturers Association.

1947 Truck Trailer Production*

	May	5 Months
Vans:		
Insulated and refrigerated	220	1,017
Furniture	74	808†
All other closed top	1,227	10,543‡
Open top	137	1,078
Total Vans	1,658	13,446
Platforms:		
With cattle and stake racks	234	1,745
With grain bodies	243	622
All other	868	5,149
Total Platforms	1,345	7,516
Tanks:		
Petroleum	173	593†
All other	46	650‡
Total Tanks	219	1,243
Pole and Logging:		
Single Axle	354	2,579
Tandem Axle	237	934
Total	591	3,513
Low-bed heavy haulers	227	1,070
Off-highway	122	405
Dump trailers	61	455
All other trailers	223	781
Total Trailers	4,446	28,429
Chassis for trailers	200	1,529
Total Trailers and Chassis	4,646	29,958

* Data from Industry Division, Bureau of the Census.

† Totals for January, April and May. No breakdown available for February and March.

‡ Includes furniture vans for February and March and also all tanks for February and March.

INDUSTRIAL NOTES

Chevrolet has announced plans for the immediate construction of a new parts manufacturing plant at Parma (near Cleveland), Ohio. It will supply both assembly plants and parts warehouses throughout the country.

SKF Industries has begun a $4,000,000 modernization program with the bulk of the expenditures going into new equipment for the company's two Philadelphia plants.

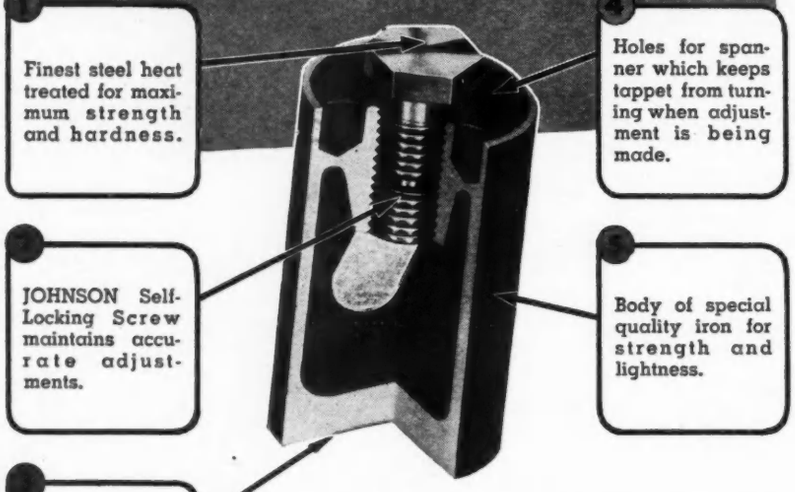
Thermoid Co. (Trenton) has purchased 25 per cent of the common stock of The Asbestos Mfg. Co. (Huntington, Ind.). It is expected that the transaction will permit the latter firm to market a full line of asbestos and rubber products for the automotive replacement field. S. E. Shepard, formerly replacement sales manager for "Raybestos," has been named vice-president and general sales manager of "Amco."

Campbell Filter & Mfg. Co. has moved its general offices and plant from Cleveland to Conneaut, Ohio, and has named John S. Sweeny as sales manager.

The Ohio Oil Co. is celebrating this month its 60th anniversary. To mark the event it has published a handsomely illustrated 48-page booklet tracing the history and growth of the company. A copy may be had by writing the general office of the company at Findlay, Ohio.

(TURN TO PAGE 170, PLEASE)

5 REASONS WHY IT PAYS TO REPLACE WITH genuine Johnson TAPPETS

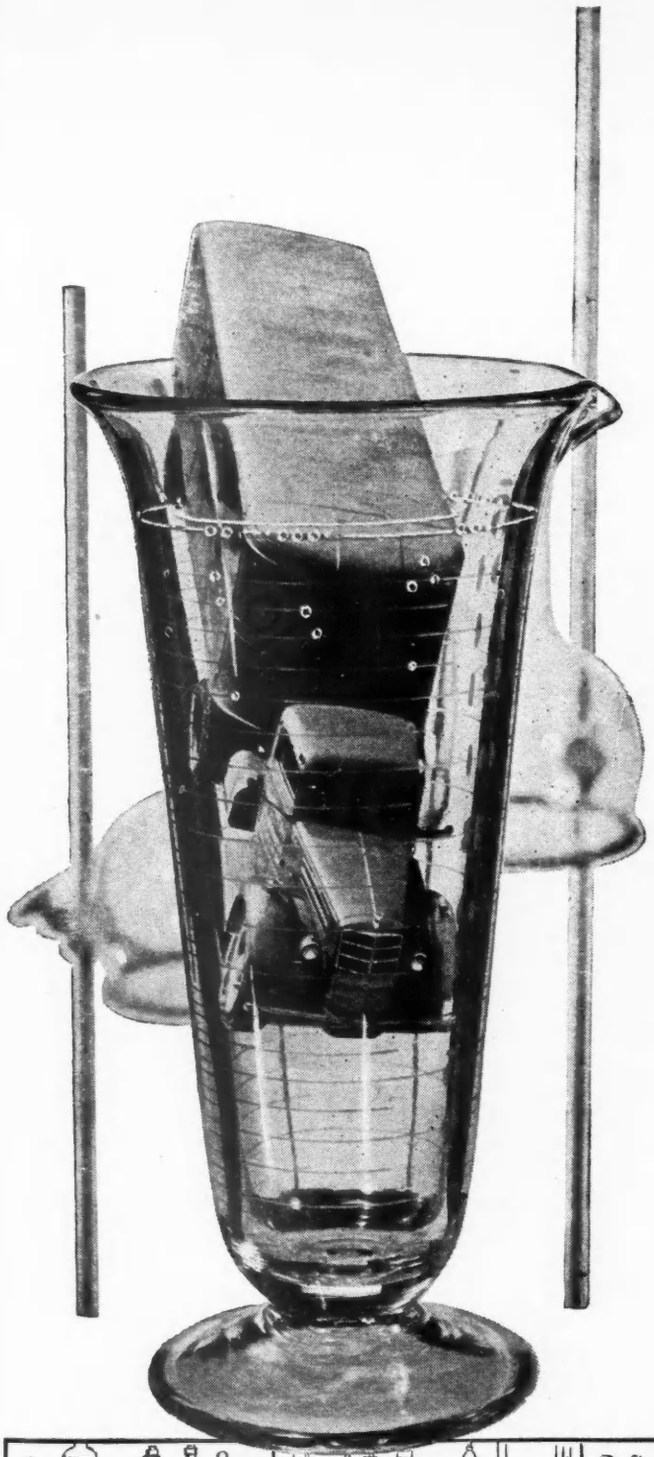


1. Finest steel heat treated for maximum strength and hardness.
2. JOHNSON Self-Locking Screw maintains accurate adjustments.
3. Hard chilled face for long wear.
4. Holes for spanner which keeps tappet from turning when adjustment is being made.
5. Body of special quality iron for strength and lightness.

Yes, and *there's profit in replacement with* JOHNSON *Tappets!* For Ford and Mercury V-8's it's the JOHNSON Adjustable Tappet (shown above). . . . For other popular makes of cars and trucks Genuine JOHNSON Replacement Tappets are also available.

DISTRIBUTED TO N. A. P. A. JOBBERS
By BALKAMP, Inc. of Indianapolis
CALL YOUR N. A. P. A. JOBBER TODAY

Johnson PRODUCTS INC.
MUSKEGON, MICHIGAN
"Tappets Are Our Business"



Why your fleet needs this Lab Service

Shortages of trucks and parts are almost as bad as during the war. This is no time to excuse avoidable repairs; it *is* time to take *extra* precautions. Here's how Valvoline can help you: In addition to the extra protection of improved Valvoline Motor Oil, Valvoline offers you expert laboratory service. As a Valvoline user, you get a thorough analysis of your drained oil to guide you in setting a safe drainage period — and to warn you if engine trouble is developing.

This added vital service is performed by men experienced in practical maintenance as well as laboratory work. It can help you avoid those costly lay-ups.

Ask your Valvoline man how you can get this service—or write

VALVOLINE

FLEET CONTROL LABORATORY SERVICE

FREEDOM-VALVOLINE OIL COMPANY

Dept. 41H Freedom, Pennsylvania

INTRODUCING...

. . . F. E. REISHUS as International Harvester branch manager at Lincoln, Neb. E. R. ZIMMERMAN succeeds him at Sioux Falls, S. D.

. . . D. J. CUMMINS as manager of engineering and quality for Cummins Engine Co., assuming most of the duties relinquished by H. L. KNUDSEN, retired.

. . . L. R. LEAVER as president of Joseph Stokes Ruber Co., Ltd., a Thermoid subsidiary at Welland, Ont.

. . . WALTER CARLSON as assistant sales manager of the truck body and hoist division, The Heil Co. JOHN ZIMMERMANN now handles company sales in Wisconsin, Michigan, Illinois, Indiana, Ohio and Kentucky.

. . . RUSSELL D. FOSTER as New England regional parts and accessories manager for Reo Motors, Inc.

. . . S. E. SHEPARD as vice-president and general manager, The Asbestos Mfg. Co. of Huntington, Ind.

. . . F. A. HITER, Stewart-Warner Corp. senior vice-president who assumes direct charge of the South Wind division succeeding L. A. WILLIAMS, JR., resigned.

. . . B. F. MORRIS as vice-president and general manager of Edison-Splitdorf Corp. in addition to duties as vice-president and general manager of Emark Battery division.

. . . STEVE J. HALL as regional sales manager in the central states for Standard Motor Products, Inc.

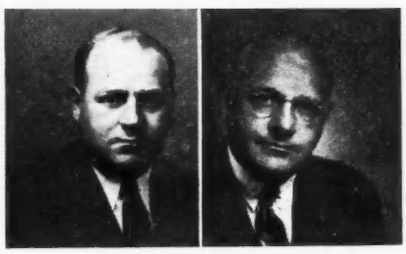
. . . E. L. HARRIC, who succeeds ED HEDNER, resigned, as national general service manager of Chevrolet division

. . . I. W. THOMPSON, who has been named general parts and accessories manager for Chevrolet division

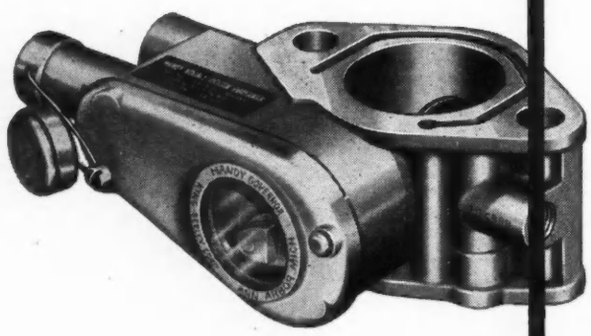
. . . WILLIAM V. LINN as advertising and sales promotion manager of the automotive division, Thermoid Co.

. . . MALCOLM P. MURDOCK as assistant general sales manager for Ethyl Corp.

. . . J. D. COURTRIGHT as manager of White Motor Co.'s new service sales division. He is replaced as manager of company's Kansas City branch by T. L. GRAHAM. LON A. FLEENER has been named assistant to W. D. PATTERSON, Pacific Coast regional manager.



. . . HARRY M. RAMSAY (left) succeeds J. C. RAY (right as sales manager of the Fisk Tire division of United States Rubber Co. Ray in turn succeeds WALTER D. BALDWIN as manager of U. S. Tires division while Baldwin will head original equipment sales.



This GOVERNOR

HELPS KEEP the Emotional Driver OUT OF TROUBLE

Anger, fatigue, grief, or joy—any one of these can temporarily transform a reasonably good truck driver into a serious traffic menace. This very thing has happened too often to ignore the danger of these human reactions.

The Handy Vari-Speed Governor, however, is not human, is never emotionally involved, but always comes to the assistance of the human driver who is. When your truck fleet is equipped with the Handy Governor, you have good reason to expect fewer accidents, and you will also save on tires, engine repairs, lubrication and brake maintenance.

The Handy Governor costs but a small fraction of what it will save you in its first year of operation.

KING-SEELEY CORPORATION
ANN ARBOR MICHIGAN

PLANTS IN ANN ARBOR · GRAND RAPIDS · YPSILANTI

Truck Specifications Table

OF CURRENT PRODUCTION MODELS

DATA SUPPLIED BY MANUFACTURERS AND TABULATED BY

COMMERCIAL CAR JOURNAL

Key to Definitions, References and Abbreviations

DEFINITIONS

MAKE AND MODEL

Only Domestic Truck Models are listed.

OPTIONAL UNITS

For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

CHASSIS LIST PRICE

The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE

The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decrease the gross vehicle weight rating when either favorable or unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

CHASSIS WEIGHT

The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with cowl, with standard tires, with standard equipment, with crankcase and cooling system full, and 5 gallons of fuel in the tank. It does not include the weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

STANDARD TIRE SIZE

The standard tire size listed is that which is included in the Chassis List Price.

MAXIMUM AUTHORIZED TIRE SIZE

The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost, if it differs from the standard size. Dual rears are understood; exceptions noted.

MINIMUM STANDARD WHEELBASE

The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

MAXIMUM STANDARD WHEELBASE

The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

MAXIMUM BRAKE HP.

Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

GEAR RATIO RANGE

Gear Ratio Range in High—Ratios within the range given are available at no extra cost. Exceptions are noted.

TRACTORS

Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

KEY TO REFERENCES

c.f.—Cab Forward design.
c.o.e.—Cab-Over-Engine design.
(D)—Diesel-engine equipped.
(T)—Designed for tractor use only.
(C)—Converted Ford or Chevrolet Model.

(2) **International Harvester**—Specifications shown represent only the basic standard chassis units and standard chassis ratings in keeping with definitions established by Commercial Car Journal. Optional units not shown such as engines, clutches, transmissions, axles or axle ratios, brakes, wheels and tires, frames or frame reinforcements, optional wheelbases or any other units which make up part of the truck chassis and which International will furnish and approve from the factory as optional equipment can or will change either the ratings, chassis weight shown or performance of the truck as indicated by this list.

Also the company reserves the privileges of assigning special gross vehicle ratings for any chassis providing in the opinion of our engineering department, the type of service justifies the new rating without decreasing the safety factor designed into the truck.

(a)—Available with Eaton Two-Speed Axle designated KS Models.

KEY TO ABBREVIATIONS

MAKES—ALL

B—Bendix
BL—Brown-Lipe.
Bu or Bud—Buda.
BW—Bendix-Westinghouse
C—Chevrolet.
Cl or Cla—Clark.
Con—Continental.
Cum—Cummins-Diesel.
Eat—Eaton.
F—Ford.
Fu—Fuller.
H—Hotchkiss.
Her—Hercules.
L—Lockheed.
LH—Lockheed front, Wagner "hi-Torc" rear.
LW—Lockheed front, Wisconsin rear.
M—Midland.
N.P.—New Process.
O or Ow—Own.
Op or Opt—Optional.
Shu—Shuler.
Spi—Spicer
T or Tim—Timken.
Tw—Timken-Westinghouse
TW—Timken-Wisconsin.
WG—Warner Gear.
Wau—Waukesha.
W or Wis—Wisconsin.
Ws—Westinghouse.
WW—Westinghouse or Wagner

WHEELS DRIVEN

2F—Forward unit of Rear Axle Group.
2R—Rear Unit of Rear Axle Group
4R—Forward and rear units of Rear Axle Group.
6—All wheels.

BRAKES—SERVICE

Location

4—Four Wheels, front and rear.
4r—Four Wheels, rear only.

Type

I—Internal.
X—External.

Operation

A—Air.
H—Hydraulic.
V—Vacuum.
Dp—Dual Primary

BRAKES—HAND

Location

C—Center of double propeller shaft.
2—Rear wheels.
4—Four wheels.
6—Six wheels.
P—Back of Power Divider.
J—Jackshaft.
T—Transmission.
F—Driveshaft.

Type

D—Tru-Stop disk.
I—Internal.
M—Mechanical.
X—External.
PD—Two drums on rear of power divider.

BRAKE DRUMS

Material

a—Cast alloy iron.
A—American Car Foundry
c—Cast iron.
Cl—Copper iron.
Co—Composite.
D—Dayton.
E—Ermalite.
G—Gunite.
N—Nickel iron.
S—Steel.

(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

FRAME

Type

C—Channel.
T—Channel tapered front and rear.
L—Channel reinforced with liner.
B—Channel reinforced with both liner and fishplate.
P—Channel reinforced with plate.
TL—Channel tapered front and rear reinforced with liner.
D—Drop Center
Tf—Tapered front.
A—Straight section sidemembers, lined with oak inserts.
Z—Reinforced (X) member frame, box type sections.

REAR AXLE

Final Drive and Type

B—Bevel.
CD—Chain Drive
F—Full-floating.
Hy—Hypoid.
d—Dual range axle.
2—Double Reduction.
S—Spiral bevel.
W—Worm.
¾—Three Quarters Floating.
½—Semi-Floating
T—Torque Tube

GEAR RATIOS

(**) Only one ratio.

Drive and Torque

H—Hotchkiss (springs).
R—Radius Rods.
L—Parallel Torque Rods
T—Torque Arm.

GOVERNOR STANDARD

Y—Yes.
N—No.

(Continued from Page 93)

Line Number	MAKE AND MODEL	Chassis List Price	WHEELBASE Minimum Standard	WHEELBASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear: Standard Front and Rear	TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number, Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	TRANSMISSION: Forward Sp'ds	REAR AXLE: Make and Model	REAR AXLE: Gear and Type	REAR AXLE: Drive X Torque	REAR AXLE: Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES SERVICE: Make Location Type Operat'n	BRAKES SERVICE: Lining Area	BRAKES SERVICE: Drum Area	BRAKES SERVICE: Drum Material	BRAKES: Hand Location Type	C-A Dimensions (Min. Std. W. B.)	FRAME: Side Rail Dimensions	FRAME: Type
1	Available																														
2	C8200-SP		126	133	15000		7.00/20D	7.50/20	Wau 6BM	6–3⅝x4¼	263	5.9	180	78–2800	7–2⅝x10¼	N	WG T9	4	Tim 53440H	SF	H	** –6.67	Tim 32502H	L4IH		a	TX	Opt	10x3x⅛	T
3	C-250-SP		105		18000		7.50/20D	8.25/20	Wau 6BZ	6–4x4¼	320	5.9	210	95–2500	7–2⅝x10¼	N	Fu 5A330	5	Tim 54411H	SF	R	6.83–7.4	Tim 32502H	L4IH	334	583	a	TX	Opt	10x3x⅛	T
4	C8-250-SP		105		20000		8.25/20D	9.00/20	Wau 6BZ	6–4x4¼	320	5.9	210	95–2500	7–2⅝x10¼	N	Fu 5A330	5	Tim 54411H	SF	R	6.83–7.4	Tim 32502H	L4IH	334	583	a	TX	Opt	10x3x⅛	T
5	C8-400-LSP		105		21500		9.00/20D	10.00/20	Wau 6BZ	6–4x4¼	320	5.9	210	95–2500	7–2⅝x10¼	N	Fu 5A330	5	Tim 56410H	SF	R	6.83–7.4	Tim 35000H	L4IH	334	583	a	TX	Opt	12x3x⅛	T
6	C8-500-SP		105		22000		9.00/20D	10.00/20	Wau 6MZA	6–4¼x4¾	404	5.9	286	112–2500	7–2⅝x12½	Y	Fu 5F430	5	Tim 56410H	SF	R	6.83–7.4	Tim 35000H	L4IH	334	583	a	TX	Opt	12x3x⅛	T
7	C8-550-SP		105		24000		9.00/20D	10.00/20	Wau 6MZA	6–4¼x4¾	404	5.9	286	112–2500	7–2⅝x12½	Y	Fu 5F430	5	Tim 58300H	SF	R	6.83–7.4	Tim 35000H	L4IH	380	660	a	TX	Opt	12x3x⅛	T
8	C8-550-SPX		112		32000		10.00/20D	11.00/20	Wau 6MZA	6–4¼x4¾	404	5.9	286	112–2500	7–2⅝x12½	Y	Fu 5F430	5	Tim S200H	2F	R	** –7.84	Tim 26450H	L4IH	570	1051	a	TX	Opt	14x3x☆	T
9	C8-600		Opt	Opt	36000		11.00/20	11.00/24	Wau 6SRKR	6–4⅝x5½	517	5.9	365	125–2300	7–2⅝x12½	Y	Fu 5F430	5	Tim S200PA	2F	R	** –7.84	Tim 27452TW	L4IH	722	1051	a	TX	Opt	14x3x☆	T
10	C8-600-SP		Opt	Opt	40000		11.00/20	11.00/24	Wau 145GK	6–5¼x6	779	5.6	530	186–2000	7–3½x17¾	Y	Spl 7841▽	8	Tim S200PA	2F	R	6.42–7.84	Tim 27452TW	L4IH	722	1051	a	TD	Opt	14x3x☆	T
11	(D) C8-600-SP		Opt	Opt	40000		11.00/20	11.00/24	Cum HB600	6–4¾x6	672	17.5	610	150–1800	7–4½x16½	Y	Spl 7841▽	8	T SW3012PA	WF	R	** –6.16	Tim 27452TW	L4IH			A	TD	Opt	14x3x☆	T
12	Biederman NSH		130	190	21000	6070	8.25/20D	10.00/20	Her JXLD	6–4x4½	339	6.9	272	131–3200	7–2½x10¹³/₁₆	N	Fu 5A330	5	TimH700DPH	SF	H	** –7.2	Tim 35000HX	LH4IH	514	744	G	T	60	9x3x¼	C
13	Biederman NSD		130	190	21000	6070	8.25/20D	10.00/20	Her JXLD	6–4x4½	339	6.9	272	131–3200	7–2½x10¹³/₁₆	N	Fu 5A330	5	TimH700DPH	2D	H	6.13–8.15	Tim 35000HX	LH4IH	514	744	G	T	60	9x3x¼	C
14	Chevrolet EP	770	116		4600		6.00/16S	15S	O-Thrift Mas.	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	3	Own	Hy	T	** –4.11	Own	O4IH	159	242	Co	2I	39	5¾x2¼x⅜	C
15	ER	865	125		♦5800		7.00/17S	7.00/18	O-Thrift Mas.	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	3	Own	HyF	H	** –4.57	Own	O4IH	178	272	Co	2I	48¼	5½x2¼x⅜	C
16	ES	910	137		8800		7.00/17S	7.00/18	O-Thrift Mas.	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	4	Own	HyF	H	** –5.14	Own	O4IH	243	371	Co	2I	60	7x2¾x⅜	C
17	QJ	1000	137		12500		7.50/20S	7.50/20	O-Thrift Mas.•	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	60	7x2¾x⅜	C
18	QK	1030	161		12500		7.00/20S	7.50/20	O-Thrift Mas.•	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	84	8¾x2⅞x⅝	C
19	(School bus) QL	1170	161		12000		6.50/20D	7.00/20	O-Thrift Mas.•	6–3½x3¾	216	6.5	174	90–3300	4– ♦ ♦	N	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I		8¾x2⅞x⅝	C
20	QVS	1380	137		15000		7.50/20D	8.25/20▲	O-Load Mas.	6–3⅞x3½	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	60	8¾x2⅞x⅝	C
21	QWS	1400	161		15000		7.50/20D	8.25/20▲	O-Load Mas.	6–3⅞x3½	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	84	8¾x2⅞x⅝	C
22	(c.o.e.) QP	●1665	110		16000		7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3½	235	6.6	189	90–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	60½	8¾x2⅞x⅝	C
23	(c.o.e.) QR	●1705	134		16000		7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3½	235	6.6	189	90–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	84½	8¾x2⅞x⅝	C
24	(c.o.e.) QS	●1725	158		16000		7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3½	235	6.6	189	90–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	108⅛	8¾x2⅞x⅝	C
25	QV	1380	137		16000		7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3½	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	60	8¾x2⅞x⅝	C
26	QW	1400	161		16000		7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3½	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I	84	8¾x2⅞x⅝	C
27	(School bus) QX	1445	199		15000		7.50/20D	8.25/20	O-Load Mas.	6–3⅞x3½	235	6.6	192	93–3100	4– ♦ ♦	Y	Own	4	Own	HyF	H	6.17	Own	O4IH	330	478	Co	2I		8¾x2⅞x⅝	C
28	Corbitt■ 18BG		137	Opt	18000		9.00/20	10.00/20	Con M6330	6–4x4⅜	330	6.1	246	104–2800	7–2⅝x12	Y	Fu 5A33	5	TimH100DPH	HyF	H	** –5.29	Tim 32502H	L4IHV			a	TX	Var	8x3¼x¼	T
29	22BG		145	Opt	22000		10.00/20	10.00/22	Con B6371	6–4½x4⅝	371	6.0	280	100–2600	7–2⅞x13½	Y	Fu 5A43	5	Tim L100DPH	HyF	H	** –5.29	Tim 35000H	L4IHV			a	TX	Var	8x3¼x¼	T
30	25BG		148	Opt	25000		10.00/22	11.00/22	Con B6427	6–4⅝x4½	427	5.9	325	127–2600	7–2⅞x13½	Y	Fu 5A43	5	Tim Q100P	HyF	H	** –6.17	Tim 35100TW	Ws4IA			a	TX	Var	8¼x3¼x⅝	T
31	(T) 18TG		137	137	18000		9.00/20	10.00/20	Con M6330	6–4x4¾	330	6.1	246	104–2800	7–2⅝x12	Y	Fu 5A33	5	Tim H100P	HyF	H	** –5.29	Tim 32502TW	Ws4IA			a	TX	60½	7⅞x3¼x⅝	T
32	(T) 22TG		145	145	22000		10.00/20	10.00/22	Con B6427	6–4⅝x4⅞	427	5.9	325	127–2600	7–2⅞x13½	Y	Fu 5A43	5	Tim L100P	HyF	H	** –5.29	Tim 35000 TW	Ws4IA			a	TX	60½	8x3¼x¼	T
33	(T) 25TG		148	148	25000		10.00/22	11.00/22	Con R6513	6–4½x5⅛	513	5.9	400	164–2600	7–3¼x14½	Y	Fu 5A620	5	Tim Q100P	HyF	H	** –6.17	Tim 35100TW	Ws4IA			a	2	60½	8¼x3¼x⅝	T
34	(T) 28TG		148	148	28000		10.00/22	11.00/24	Con R6602	6–4⅞x5½	602	5.9	460	183–2600	7–3¼x14½	Y	Fu 5A650	5	Tim S200P	HyF	H	** –6.42	Tim 26450W	Ws4IA			a	2	60½	8¼x3¼x⅝	T
35	(D) (T) ◆27TD		152	152	27000		10.00/22	11.00/24	Cum HB600	6–4¾x6	672	17	500	150–1800	7–4½x16½	Y	Fu 5A920	5	Tim Q100P	HyF	H	** –5.29	Tim 26450W	Ws4IA			a	2	60½	8¼x3¼x⅝	T
	(D) (T) 28TD		155	155	28000		10.00/22	11.00/24	Cum NHB600	6–5¼x6	743	15	575	200–2100	.....	Y	Fu 5A920	5	Tim S200P	HyF	H	** –6.42	Tim 26450W	Ws4IA			a	2	60½	8¼x3¼x⅝	T
	2-speed models																														
36	(T) 18TG		137	137	18000		9.00/20	10.00/20	Con M6330	6–4x4⅜	330	6.1	246	104–2800	7–2⅝x12	Y	Fu 5A330	5	Tim H300P	dF	H	6.13–8.15	Tim 32502TW	Ws4IA			a	TX	60½	7⅞x3¼x⅝	T
37	(T) 22TG		145	145	22000		10.00/20	10.00/22	Con B6427	6–4⅝x4⅞	427	5.9	325	127–2600	7–2⅞x13½	Y	Fu 5A430	5	Tim L300P	dF	H	6.32–8.20	Tim 35000TW	Ws4IA			a	TX	60½	8x3¼x¼	T
38	(T) 25TG		148	148	25000		10.00/22	11.00/22	Con R6513	6–4½x5⅛	513	5.9	400	164–2600	7–3¼x13½	Y	Fu 5A620	5	Tim Q300P	dF	H	6.53–8.53	Tim 35100TW	Ws4IA			a	2	60½	8¼x3¼x⅝	T
39	(T) 28TG		148	148	28000		10.00/22	11.00/24	Con R6602	6–4⅞x5½	602	5.9	460	183–2600	7–3¼x13½	Y	Fu 5A650	5	Tim R300P	dF	H	4.92–6.42	Tim 26450W	Ws4IA			a	2	60½	8¼x3¼x⅝	T
40	(D) (T) 22TD		145	145	22000		10.00/20	10.00/22	Her DWXD	6–4¼x4¾	404	15	330	146–2600	.....	Y	Fu 5A430	5	Tim Q300P	dF	H	6.53–8.53	Tim 35100TW	Ws4IA			a	TX	60½	8¼x3¼x⅝	T
41	(D) (T) 25TD		148	148	25000		10.00/22	11.00/22	Her DRXC	6–4⅝x5¼	529	14	380	147–2200	7–3½x13¾	Y	Fu 5A620	5	Tim R300P	dF	H	4.92–6.42	Tim 26450W	Ws4IA			a	2	60½	8¼x3¼x⅝	T
42	(D) (T) 27TD		152	152	27000		10.00/22	11.00/24	Cum HB600	6–4¾x6	672	17	500	150–1800	7–4½x16½	Y	Fu 5A920	5	Tim R300P	dF	H	4.92–6.42	Tim 26450W	Ws4IA			a	2	60½	8¼x3¼x⅝	T
43	(D) (T) 28TD		155	155	28000		10.00/22	11.00/24	Cum NHB600	6–5½x6	743	15	575	200–2100	.....	Y	Fu 5A920	5	Tim R300P	dF	H	4.92–6.42	Tim 26450W	Ws4IA			a	2	60½	8¼x3¼x⅝	T
44	Crosley B		80		1650		4.50/12		Own CE7	4–2½x2¼	44	7.5	33	26–5400	5–‡		WG-ASI-T92	3	Spi		F	** –5.17	Own	Haw M	64	72	C					
45	Dodge WC		116		4600		6.00/16S	6.50/16S	Own T-112	6–3¼x4⅜	217	6.6	172	95–3600	4–2½x4.8	N	NP 36520	3	Own T112	HyS	H	3.73–4.78	Own T112	O4IH	174	264	Co	TX	40½	6☆x2☆x☆	C
46	WD-15		120		5200		TA-15S	TA-15S	Own T-114	6–3¼x4⅜	217	6.6	172	95–3600	4–2½x4.8	N	NP 36520	3	Own T114	HyS	H	3.73–4.78	Own T114	O4IH	183	276	Co	TX	44½	6½x2☆x☆	C
47	WD-20		120	133	7000		6.50/16S▲	6.00/20	Own T-116	6–3¼x4¼	230	6.7	184	102–3600	4–2½x4.8	N	NP 37520	3	Own T116	HyF	H	3.90–4.89	Own T116	O4IH	197	294	Co	TX	44½	6½x2☆x☆	C
48	WD-21		135	160	9500		6.00/20S‡	6.50/20	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Own T118	HyF	H	5.11–6.83	Own T118	O4IH	284	407	C	TX	60	7x2¾x.21	C
49	WF-31		135	200	14000		6.00/20S‡	8.25/20§	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Own T118	HyF	H	5.11–6.83	Own T118	O4IH	284	407	C	TX	60	7x2¾x.21	C
50	WFA-31		135	200	14000		6.00/20S‡	8.25/20§	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Eat A5-1350	SFd	H	Dual Rge.	Own T118	O4IH	284	407	C	TX	60	7x2¾x.21	C
51	(c.o.e.) WFM-35		105	159	14500		6.00/20S‡	8.25/20§	Own T-128	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38780	4	Own T128	HyF	H	5.11–6.83	Own T128	O4IH	284	407	C	TX	60	7x2¾x⅜	C
52	(c.o.e.) WFMA-35		105	159	14500		6.00/20S‡	8.25/20§	Own T-128	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38780	4	Eat A5-1350	SFd	H	Dual Rge.	Own T128	O4IH	284	407	C	TX	60	7x2¾x⅜	C
53	WG-40		136	220	15500		6.00/20D	8.25/20	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Own T120	HyF	H	5.11–7.16	Own T120	O4IHV	359	503	C	TX	60½	8☆x2¾x⅜	C
54	WGA-40		136	220	15500		6.00/20D	8.25/20	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Eat A5-1350	SFd	H	Dual Rge.	Own T120	O4IHV	359	503	C	TX	60½	8☆x2¾x⅜	C
55	WGAX-40		136	220	16000		9.00/20D°	9.00/20°	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Eat 16500	SFd	H	Dual Rge.	Own T120	O4IHV	391	609	C	TX	60½	8☆x2¾x⅜	C
56	(c.o.e.) WGM-40		105	159	16000		6.00/20D°	8.25/20	Own T-130	6–3⅞x4½	250	6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Own T130	HyF	H	5.11–7.16	Own T130	O4IHV	359	503	C	TX	60	8☆x2¾x⅜	C
57	(coe) WGMA-40		105	159	16000		6.00/20D	8.25/20	Own T-130	6–3⅞x4½	250	6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Eat A5-1350	SFd	H	Dual Rge.	Own T130	O4IHV	359	503	C	TX	60	8☆x2¾x⅜	C
58	(coe) WGMAX-40		105	159	16500		9.00/20D°	9.00/20°	Own T-130	6–3⅞x4½	250	6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Eat 16500	SFd	H	Dual Rge.	Own T130	O4IHV	391	609	C	TX	60	8☆x2¾x⅜	C
59	WH-45		136	220	15500		6.50/20D	8.25/20	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Own T120	HyF	H	5.11–7.16	Own T120	O4IHV	359	503	C	TX	60½	8☆x2¾x⅜	C
60	WHA-45		136	220	15500		6.50/20D	8.25/20	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Eat A5-1350	SFd	H	Dual Rge.	Own T120	O4IHV	359	503	C	TX	60½	8☆x2¾x⅜	C
61	WHAX-45		136	220	16000		9.00/20D°	9.00/20°	Own T-120	6–3⅞x4½	250	6.6	204	114–3600	4–2½x5.0	Y	NP 39240	5	Eat 16500	SFd	H	Dual Rge.	Own T120	O4IHV	391	609	C	TX	60½	8☆x2¾x⅜	C
62	(c.o.e.) WHM-45		105	159	16000		6.50/20D	8.25/20	Own T-130	6–3⅞x4½	250	6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Own T130	HyF	H	5.11–7.16	Own T130	O4IHV	359	503	C	TX	60	8☆x2¾x⅜	C
63	(coe) WHMA-45		105	159	16000		6.50/20D	8.25/20	Own T-130	6–3⅞x4½	250	6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Eat A5-1350	SFd	H	Dual Rge.	Own T130	O4IHV	359	503	C	TX	60	8☆x2¾x⅜	C
64	(coe) WHMAX-45		105	159	16500		9.20/20D°	9.00/20°	Own T-130	6–3⅞x4½	250	6	204	114–3600	4–2½x5.0	Y	NP 39290	5	Eat 16500	SFd	H	Dual Rge.	Own T130	O4IHV	391	609	C	TX	60	8☆x2¾x⅜	C
65	WJ-55		136	235	18500		7.50/20D	9.00/20	Own T-136	6–3¾x4¼	281	6.5	225	115–3200	7–3x11.2	Y	NP 39460	5	TimH100DPH	HyF	H	6.80–7.20	Tim T136	T4IHV	396	609	C	TX	60½	8☆x2¾x⅜	C
66	WJA-55		136	235	18500		7.50/20D	9.00/20	Own T-136	6–3¾x4¼	281	6.5	225	115–3200	7–3x11.2	Y	NP 39460	5	TimH300DPH	HyF	H	Dual Rge.	Tim T136	T4IHV	396	609	C	TX	60½	8☆x2¾x⅜	C
67	WK-65		136	196	21000		8.25/20D	10.00/20	Own T-135	6–3¾x5	331	6.5	270	128–3000	7–3x11.2	Y	NP 39440	5	Tim L100DPH	HyF	H	6.83–7.40	Ti 32500NX14	T4IHV	424	666	C	TX	60½	8☆x2⅝x⅜	P
68	WKA-65		136	196	21000		8.25/20D	10.00/20	Own T-135	6–3¾x5	331	6.5	270	128–3000	7–3x11.2	Y	NP 39440	5	Tim L300DPH	HyF	H	Dual Rge.	Ti 32500NX14	T4IHV	424	666	C	TX	60½	8☆x2⅝x⅜	C
69	WR-65		136	196	23000		11.00/20†	11.00/20†	Own T-135	6–3¾x5	331	6.5	270	128–3000	7–3x11.2	Y	NP 39440	5	Tim 100DPH	HyF	H	6.83–7.80	Tim35020NX9	T4IHV	486	770	C	TX	60½	8☆x2⅝x⅜	C
70	WRA-65		136	196	23000		11.00/20†	11.00/20†	Own T-135	6–3¾x5	331	6.5	270	128–3000	7–3x11.2	Y	NP 39440	5	Tim 300DPH	HyF	H	Dual Rge.	Tim35020NX9	T4IHV	486	770	C	TX	60½	8☆x2⅝x⅜	C
71	WFX-31		135	200	15000		7.50/20	8.25/20	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Own T-118	HyF	H	5.62–6.83	Own T-118	O4IHV	284	407	C	TX	60	7x2¾x .21	C
72	WFAX-31		135	200	15000		7.50/20	8.25/20	Own T-118	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38750	4	Eat A5-1350	SFd	H	5.83–8.11	Own T-118	O4IHV	284	407	C	TX	60	7x2¾x⅜	C
73	(c.o.e.) WFMX		105	105	15500		7.50/20	8.25/20	Own T-128	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38780	4	Own T-128	HyF	H	5.62–6.83	Own T-128	O4IHV	284	407	C	TX	60	7x2¾x .21	C
74	(c.o.e.) WFMAX		105	105	15500		7.50/20	8.25/20	Own T-128	6–3⅞x4¼	236	6.6	192	109–3600	4–2½x5.0	N	NP 38780	4	Eat A5-1350	SFd	H	5.83–8.11	Own T-128	O4IHV	284	407	C	TX	60	7x2¾x⅜	C

† Dual Rear Only; Front 10.00/20. °—Rear only; front 8.25/20. □ Chevrolet own rear axle (5.43:1) available at extra cost on Models QJ-QK-QL. Chevrolet own 2-speed rear axle (6.13–8.10:1) available at extra cost on Models QVS-QWS-QP-QR-QS-QV-QW-QX. ♦ 7.50/17 tire is optional for Rear, or Front & Rear, with no increase in G.V.W. ▽ With Spl 703A with 3 forward speeds. ‡ Front only; Rear 6.50/20S. ▲ 7.50/20 can be used on the front with no change in 15000 G.V.W. • Own Loadmaster engine available on models QJ-QK-QL at extra cost. §—Rear only; front 7.50/20.

△ Rear only ■ Sleeper cab models available in 25-27-28 Series with 25 inch longer wheelbase. $—1 Front 1.307x1.520; 3 Center .865x1.520; 1 Rear 1.498x2.00.

♦ ♦ Diameter: Front, 2.6870; Front Center, 2.7180; Rear Center, 2.7490; Rear, 2.7890; Total length, 5⅞. ● Includes cab.

(Turn to Page 96, Please)

. . Safety
in full measure

● Protection against fire and explosion reaches a new high in the Mack Safety Fuel Tank. Here are some of its outstanding safeguards.

Crash Resistant! Greater strength and maximum resistance to crash is provided by its cylindrical form. . with convex ends . . and electrically welded construction.

Spill-Proof! Spillage with resultant fire hazard in case of overturn is prevented by a tight-seal filler cap and by a separate vent with ball valve which seats by gravity if the tank is turned over. This valve also checks spillage from internal heat pressure because, above a certain pressure, it seats and seals off the vent.

Non-Explosive! Vent holes in the filler tube are so placed that adequate air space is secured at the top of the tank. This provides a cushion against concussion in case of impact. In addition, rupture from excess internal heat pressure is prevented by a fusible plug which melts above a certain temperature

The Mack Safety Fuel Tank is built complete in Mack factories. Its design and construction are further evidence of the extra care — in every part — that goes into the making of a Mack.

Mack

since 1900, America's hardest-working truck

Mack Trucks, Inc., Empire State Building, New York 1, New York.
Factories at Allentown, Pa.; Plainfield, N. J.;
New Brunswick, N. J.; Long Island City, N. Y. Factory
branches and dealers in all principal cities for service
and parts. In Canada, Mack Trucks of Canada, Ltd.

Trucks for every purpose

R. J. Crouthamel, Norristown, Pa., recently added this Mack Model LFT tractor to his fleet. Replacing a smaller unit, it hauls an additional 5 tons with lower gas consumption per ton mile.

(Continued from Page 94)

Line Number	MAKE AND MODEL	Chassis List Price	WHEELBASE Minimum Standard	WHEELBASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear Standard Front and Rear	TIRE SIZES Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings Number, Diameter and Length	Governor Standard	TRANSMISSION Make and Model	Forward Sp'ds	REAR AXLE Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High	FRONT AXLE Make and Model	BRAKES SERVICE Make Location Type Operat'n	Lining Area	Drum Area	Drum Material	Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME Side Rail Dimensions	Type
	Dodge (School Bus)																													
1	WF-32-S		160		14500		6.50/20D	7.50/20	Own T-118	6–3 7/16 x4 1/4	236	6.6	192	109–3600	4–2 1/2 x5.0	N	NP 38750	4	Own T118	HyF	H	6.28–6.83	Own T118	O4IH	284	407	C	TX		7x2 3/4 x .21	C
2	WF-34-S		178		14500		7.00/20D	7.50/20	Own T-118	6–3 7/16 x4 1/4	236	6.6	192	109–3600	4–2 1/2 x5.0	N	NP 38750	4	Own T118	HyF	H	6.28–6.83	Own T118	O4IHV	284	407	C	TX		7 1/2 x2 3/4 x 1/4	C
3	WF-36-S		200		14500		7.50/20D	7.50/20	Own T-118	6–3 7/16 x4 1/4	236	6.6	192	109–3600	4–2 1/2 x5.0	N	NP 38750	4	Own T118	HyF	H	6.28–6.83	Own T118	O4IHV	284	407	C	TX		7 1/2 x2 3/4 x 1/4	P
4	WH-49-S		220		16000		7.50/20D	8.25/20	Own T-120	6–3 7/16 x4 1/2	250	6.6	204	114–3600	4–2 1/2 x4.88	N	NP 39240	5	Own T120	HyF	H	6.28–7.16	Own T120	O4IHV	359	503	C	TX		8 x2 1/2 x 5/16	P
5	WJ-59-S		235		18500		9.00/20D	9.00/20	Own T-136	6–3 3/4 x4 1/4	282	6.5	225	115–3200	7–3x11.2	Y	NP 39460	5	TimH100DPH	HyF	H	6.8–7.2	Tim32525NX1	T4IHV	396	609	C	TX		8 x2 1/2 x 5/16	P
6	Duplex T		136	220	18000	6600	8.25/20	9.00/20	Her JXD	6–4x4 1/4	320	6.2	240	113–3000	7–2 1/2 x10 1/2	Y	Fu 5B330	5	Tim H100	B	H	** –6.83	Tim 32502	L4IHV	420	654	A	TX	59	9 1/2 x3 1/2 x 1/2	C
7	R		136	220	25000	8820	9.00/20	10.00/20	Her WXLC-3	6–4 1/4 x4 3/4	404	5.8	12	139–2600	7–2 5/8 x13 1/4	Y	Fu 5A43	4	Tim Q300	DF	R	6.53–8.53	Tim 35000	L4IHV	730	1016	A	TX	79 1/4	9 1/4 x3 1/2 x 1/2	C
8	JHA		148	220	28000	9800	10.00/20D	11.00/20	Her RXB	6–4 1/2 x5 1/4	501	5.4	360	121–2200	7–3x14	Y	Fu 5A620	5	Tim S200	2F	R	** –9.81	Tim 26450	W84IA	912	1311	A	TX	79	10 1/4 x3 1/2 x 1/2	C
9	KHA		148	220	32000	10500	11.00/20	11.00/20	Her RXC	6–4 1/2 x5 1/4	529	5.4	395	132–2300	7–3x14 1/4	Y	Fu 5A620	5	Tim U-200	2F	R	** –9.81	Tim 26450	W84IA	912	1311	A	TX	79	10 1/4 x3 1/2 x 1/2	C
10	Federal 16M	1795	146	194	13500	4460	7.50/20D	7.50/	Her JXEF	6–3 1/4 x4 1/4	245	6.5	180	87–3000	7–2 1/4 x10 1/2	N	WG T9	4	T 53547DPH	BF	H	** –5.66	Tim 30000HX	L4IHV	310	482	a	TX	67	8 x2 1/2 x 1/4	T
11	18M	2175	146	194	15000	4700	8.25/20D	8.25/	Her JXBF	6–3 1/2 x4 1/4	263	6.5	189	93–3000	7–2 1/2 x10 1/2	N	WG T9	4	Tim E100DPH	SF	H	** –6.20	Tim 30003H	LT4IHV	314	532	a	TX	67	8 x2 1/2 x 1/4	T
12	18M2	2315	146	194	15000	4830	8.25/20D	8.25/	Her JXBF	6–3 1/2 x4 1/4	263	6.5	189	93–3000	7–2 1/2 x10 1/2	N	WG T9	8	Tim E300DPH	dF	H	6.13–8.10	Tim 30003H	LT4IHV	314	532	a	TX	67	8 x2 1/2 x 1/4	T
13	25M	2425	146	194	17500	4950	8.25/20D	9.00/20D	Her JXCF	6–3 3/4 x4 1/4	282	6.5	212	102–3000	7–2 1/2 x10 1/2	N	Cla 205VO	5	TimH100DPH	SF	H	** –6.80	Tim 3100H	LT4IHV	346	583	a	TX	67	8 x2 1/2 x 1/4	T
14	25M2	2575	146	194	17500	5100	8.25/20D	9.00/20D	Her JXCF	6–3 3/4 x4 1/4	282	6.5	212	102–3000	7–2 1/2 x10 1/2	N	Cla 205VO	5	TimH300DPH	dF	H	6.13–8.15	Tim 3100H	LT4IHV	346	583	a	TX	67	8 x2 1/2 x 1/4	T
15	29M	3025	146	194	20000	5500	9.00/20D	10.00/20	Her JXDF	6–4x4 1/4	320	6.5	246	112–2800	7–2 1/2 x10 1/2	Y	Cla 205V	5	Tim L100DPH	SF	H	** –6.83	Tim 32514H	LT4IHV	390	654	a	TX	67	8 x2 1/2 x 1/4	T
16	29M2	3250	146	194	20000	5690	9.00/20D	10.00/20	Her JXDF	6–4x4 1/4	320	6.5	246	112–2800	7–2 1/2 x10 1/2	Y	Cla 205V	10	Tim L300DPH	dF	H	6.32–8.22	Tim 32514H	LT4IHV	390	654	a	TX	67	8 x2 1/2 x 1/4	T
17	29MA	3425	155	194	20000	5950	9.00/20D	10.00/20	Her JXDF	6–4x4 1/4	320	6.5	246	112–2800	7–2 1/2 x10 1/2	Y	Cla 205V†	15	Tim L100DPH	SF	H	** –6.83	Tim 32514H	LT4IHV	466	820	a	TD	76	8 x2 1/2 x 1/4	T
18	29ML	3240	146	194	20000	5535	9.00/20	10.00/20	Here JXLDF	6–4x4 1/2	339	6.5	264	119–2800	7–2 1/2 x10 1/2	Y	Cla 205V	5	Tim L100DPH	SF	H	** –6.83	Tim 32514H	LT4IHV	390	654	a	TX	67	8 x2 1/2 x 1/4	‡T
19	29ML2	3465	146	194	20000	5725	9.00/20	10.00/20	Here JXLDF	6–4x4 1/2	339	6.5	264	119–2800	7–2 1/2 x10 1/2	Y	Cla 205V	10	Tim L300DPH	dF	H	6.32–8.22	Tim 32514H	LT4IHV	390	654	a	TX	67	8 x2 1/2 x 1/4	‡T
20	29MLA	3640	155	194	20000	5985	9.00/20	10.00/20	Here JXLDF	6–4x4 1/2	339	6.5	264	119–2800	7–2 1/2 x10 1/2	Y	Cla 205V	15	Tim L100DPH	SF	H	** –6.83	Tim 32514H	LT4IHV	466	820	a	TD	76	8 x2 1/2 x 1/4	‡T
21	45M	5030	143	203	24000	8005	10.00/22D	10.00/24	Con B6427	6–4 1/8 x4 7/8	427	6.4	332	133–2600	7–2 3/4 x13 1/2	Y	Cla 270VO	5	Tim Q100P	SF	R	** –6.83	Tim 35011TW	TW4IA	606	933	a	TD	60 1/2	10 1/2 x3 1/2 x 1/2	T
22	45M2	5375	143	203	24000	8380	10.00/22D	10.00/24	Con B6427	6–4 1/8 x4 7/8	427	6.4	332	133–2600	7–2 3/4 x13 1/2	Y	Cla 270VO	10	Tim Q300P	dF	R	6.53–8.53	Tim 35011TW	TW4IA	606	933	a	TD	60 1/2	10 1/2 x3 1/2 x 1/2	T
23	55M2	5780	143	203	27000	8635	11.00/22D	11.00/24	Con B6427	6–4 1/8 x4 7/8	427	6.4	332	133–2600	7–2 3/4 x13 1/2	Y	Cla 270VO	10	Tim S300P	HyF	R	6.53–8.53	Tim 36021TW	Tw4IA	722	1051	a	TD	60 1/2	10 1/2 x3 1/2 x 1/2	T
24	55MA	6075	155	203	27000	8765	11.00/22D	11.00/24	Con B6427	6–4 1/8 x4 7/8	427	6.4	332	133–2600	7–2 3/4 x13 1/2	Y	Cla 270V†	15	Tim S-200P	2F	R	** –7.08	Tim 36021TW	TW4IA	722	1051	a	TD	72 1/2	10 1/2 x3 1/2 x 1/2	‡T
25	60MA	7075	155	203	28000	9600	11.00/22D	11.00/24	Con 22R	6–4 1/2 x5 1/8	501	5.4	384	148–2400	7–2 3/4 x14 1/2	Y	Fu 5A65‡	15	Tim S200P	2F	R	** –7.08	Tim 36021TW	Tw4IA	722	1051	a	FX	72 1/2	10 1/2 x3 1/2 x 1/2	‡T
26	60M2	6675	143	203	28000	9370	11.00/22D	11.00/24	Con 22R	6–4 1/2 x5 1/8	501	5.4	384	148–2400	7–2 3/4 x14 1/2	Y	Fu 5A650	10	Tim S300P	HyF	R	6.53–8.53	Tim 36021TW	Tw4IA	722	1051	a	TX	60 1/2	10 1/2 x3 1/2 x 1/2	T
27	65M2	7995	141	201	30000	9995	11.00/22D	11.00/24	Con R6602	6–4 1/4 x5 5/8	602	6.1	464	200–2600	7–3 1/4 x14 1/2	Y	Fu 5A650	10	Tim S300P	HyF	R	6.53–8.53	Tim 36000TW	Ws4IA	722	1051	a	TX	72 1/2	10 1/2 x3 1/2 x 1/2	T
28	65MA	8340	153	201	30000	10225	11.00/22D	11.00/24	Con R6602	6–4 1/4 x5 5/8	602	6.1	464	200–2600	7–3 1/4 x14 1/2	Y	Fu 5A65‡	15	Tim S200P	HyF	R	** –7.08	Tim 36000TW	Ws4IA	722	1051	a	TX	72 1/2	10 1/2 x3 1/2 x 1/2	T
	Ford																													
	Light Duty																													
29	Chs. Cowl..79C	858	114	114	4700	$2276	6.50/168	6.50/168	Own 59C	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 21C	3	Own 21C	S 3/4	H	** –3.78	Own 21C	O4IH	162	264	Co	21	40.06	5.92x2 1/2 x.15	T
30	Chs. Cowl..7GC	828	114	114	4700	$2276	6.50/168	6.50/168	Own 5GC	6–3.3x4.4	226	6.7	180	90–3300	4–2 1/2 x4.88	N	Own 2GC	3	Own 21C	S 3/4	H	** –3.78	Own 21C	O4IH	162	264	Co	21	40.06	5.92x2 1/2 x.15	T
31	Chs. Cowl..79Y	1039	122	122	6600	$2776	7.50/178▽	7.50/178▽	Own 59Y	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 51Y	4	Own 21Y	SF	H	** –4.85	Own 21Y	O4IH	187	308	Co	21	48.06	6x2 1/4 x .19	T
32	Chs. Cowl..7GY	1009	122	122	6600	$2776	7.50/178▽	7.50/178▽	Own 5GY	6–3.3x4.4	226	6.7	180	90–3300	4–2 1/2 x4.88	N	Own 51Y	4	Own 21Y	SF	H	** –4.85	Own 21Y	O4IH	187	308	Co	21	48.06	6x2 1/4 x .19	T
	Heavy Duty Dump																													
33	Chs. Cowl..79U	1223	134	134	12500	$3911	7.50/20D	7.50/20	Own 59T	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	60.06	7x2 3/4 x .21	LT
34	Chs. Cowl..7GU	1193	134	134	12500	$3911	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2 1/2 x4.88	N	Own 4GT	4	Own 01T	SF	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	60.06	7x2 3/4 x .21	LT
	Heavy Duty Truck																													
35	Chs. Cowl..79T	1211	134	134	12500	$3906	7.50/20D	7.50/20	Own 59T	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	60.06	7x2 3/4 x .21	LT
36	Chs. Cowl..7GT	1181	134	134	12500	$3906	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2 1/2 x4.88	N	Own 4GT	4	Own 01T	SF	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	60.06	7x2 3/4 x .21	LT
37	Chs. Cowl..798T	1246	158	158	12500	$3986	7.50/20D	7.50/20	Own 59T	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	84.06	7x2 3/4 x .21	LT
38	Chs. Cowl.7G8T	1216	158	158	12500	$3986	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2 1/2 x4.88	N	Own 4GT	4	Own 01T	SF	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	84.06	7x2 3/4 x .21	LT
	Heavy Duty COE																													
39	Cab Chs...791W	1494	101	101	13500	$4333	7.50/20D	7.50/20	Own 59W	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01W	O4IH	303	506	Co	TX	60.06	7x2 3/4 x .21	T
40	Cab Chs...79W	1529	134	134	13500	$4468	7.50/20D	7.50/20	Own 59W	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01W	O4IH	303	506	Co	TX	93.06	7x2 3/4 x .21	LT
41	Cab Chs...798W	1554	158	158	13500	$4543	7.50/20	7.50/20	Own 59W	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01W	O4IH	303	506	Co	TX	117.1	7x2 3/4 x .21	LT
	Heavy Duty Dump																													
42	Chs. Cowl.79UH	1515	134	134	14500	$4076	8.25/20^D	8.25/20^	Own 59T	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 41T	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01T	O4IHV	303	506	Co	TX	60.06	7x2 3/4 x .21	LT
43	Chs.Cowl.7GUH	1485	134	134	14500	$4076	8.25/20^D	8.25/20^	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2 1/2 x4.88	N	Own 4GT	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01T	O4IHV	303	506	Co	TX	60.06	7x2 3/4 x .21	LT
	Heavy Duty Truck																													
44	Chs. Cowl.79TH	1503	134	134	14500	$4071	8.25/20^D	8.25/20^	Own 59T	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 41T	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01T	O4IHV	303	506	Co	TX	60.06	7x2 3/4 x .21	LT
45	Chs.Cowl.7GTH	1473	134	134	14500	$4071	8.25/20^D	8.25/20^	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2 1/2 x4.88	N	Own 4GT	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01T	O4IHV	303	506	Co	TX	60.06	7x2 3/4 x .21	LT
46	Chs.Cowl.798TH	1538	158	158	14500	$4151	8.25/20^D	8.25/20^	Own 59T	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 41T	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01T	O4IHV	303	506	Co	TX	84.06	7x2 3/4 x .21	LT
47	Chs.Cowl.7G8TH	1508	158	158	14500	$4151	8.25/20^D	8.25/20^	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2 1/2 x4.88	N	Own 4GT	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01T	O4IHV	303	506	Co	TX	84.06	7x2 3/4 x .21	LT
	Heavy Duty COE																													
48	Cab Chs.791WH	1788	101	101	15000	$4498	8.25/20^D	8.25/20^	Own 59W	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 41T	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01W	O4IHV	303	506	Co	TX	60.06	7x2 3/4 x .21	T
49	Cab Chs..79WH	1823	134	134	15000	$4633	8.25/20^D	8.25/20^	Own 59W	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 41T	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01W	O4IHV	303	506	Co	TX	93.06	7x2 3/4 x .21	LT
50	Cab Chs.798WH	1848	158	158	15000	$4708	8.25/20^D	8.25/20^	Own 59W	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 41T	4	Own 59T-M■	SFD	H	5.83–8.11	Own 01W	O4IHV	303	506	Co	TX	117.1	7x2 3/4 x .21	LT
	School Bus																													
51	Cowl Chs.,.798T	1330	158	158	13500	$3970	7.50/20D	7.50/20	Own 59T	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	.....	7x2 3/4 x .21	T
52	Cowl Chs..7G8T	1300	158	158	13500	$3970	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2 1/2 x4.88	N	Own 4GT	4	Own 01T	SF	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	.....	7x2 3/4 x .21	LT
53	Cowl Chs.,.794T	1423	194	194	14500	$4140	7.50/20D	7.50/20	Own 59T	8–3 1/8 x3 3/4	239	6.7	180	100–3800	3–2 1/2 x4.96	N	Own 41T	4	Own 01T	SF	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	.....	7x2 3/4 x .21	T
54	Cowl Chs..7G4T	1393	194	194	14500	$4140	7.50/20D	7.50/20	Own 5GT	6–3.3x4.4	226	6.7	180	90–3300	4–2 1/2 x4.88	N	Own 4GT	4	Own 01T	SF	H	** –6.66	Own 01T	O4IH	303	506	Co	TX	.....	7x2 3/4 x .21	LT
55	Hudson (3/4T. Pkp)		128	128	4810		6.50/16-6	6.50/16-6	Own 178	6–3x5	212	6.5	168	102–4000	3– ▲▲	N	Own	3	Own	S 1/2	H	** –4.55	Own	B4IH	141	242	C	2I	42 1/2	7 1/2 x1 1/4 x 1/2	B
56	Intern'l (2)...KB-1	800	113	125	4400	2190	6.00/16-4	7.00/16	Own GRD214	6–3 7/8 x4 1/2	213	6.3	160	82–3400	4–2 5/8 x6 1/2	N	Own HDS-B	3	Own R1050	S 1/2	H	3.72–5.11	Own F50	L4IH	164	316	e	FX	38	6x2 1/4 x 1/4	C
57	KB-1M	755	102	113	4600	2090	6.00/16-4	6.50/16-6	Own GRD214	6–3 7/8 x4 1/2	213	6.3	160	82–3400	4–2 5/8 x6 1/2	N	O SA-HDS-B	3	Own R1050	S 1/2	H	3.72–5.11	Own F150	L4IH	164	316	e	FX	.....	6 1/2 x2 1/4 x 1/2	C
58	KB-2	840	125	125	5200	2225	6.00/16-4	7.00/16-6	Own GRD214	6–3 7/8 x4 1/2	213	6.3	160	82–3400	4–2 5/8 x6 1/2	N	Own HDS-B	3	Own R1050	S 1/2	H	3.72–5.11	Own F50	L4IH	164	316	e	FX	50	6 1/8 x2 1/4 x 1/2	C
59	KB-3	980	130	....	6650	2970	7.00/16-6	7.50/16-6	Own GRD214	6–3 7/8 x4 1/2	213	6.3	160	82–3400	4–2 5/8 x6 1/2	N	Own HDS-B	3	Own R1150	SF	H	4.22–5.28	Own F150	L4IH	195	367	e	FX	55	6 1/2 x2 1/4 x 1/2	C
60	KB-3M	905	102	113	7000	2525	7.00/16-6	7.50/16-8	Own GRD214	6–3 7/8 x4 1/2	213	6.3	160	82–3400	4–2 5/8 x6 1/2	N	Own H41B	4	Own R1150	SF	H	4.22–5.28	Own F150	L4IH	221	367	e	TX	.....	6 1/2 x2 1/4 x 1/2	C
61	(a)..... KB-5	1130	135	177	13500	3630	6.50/20D	8.25/20	O-GRD 233	6–3 7/8 x4 1/2	233	6.3	181	93–3400	4–2 5/8 x6 1/2	N	Own H41B	4	Own R1360	SF	H	5.28–7.16	Own F350	LH4IB	294	509	e	TX	60	8x3x 1/2	T
62	(a)..... KB-6	1575	134	176	14500	4530	7.00/20D	8.25/20	Own BLD250	6–3 7/8 x4 1/2	251	6.3	200	100–3200	4–2 5/8 x5 1/2	N	Own WT97A	5	Own R1450	SF	H	5.62–7.16	Own F470	LH4IHV	305	539	e	TX	60	8 1/4 x3 1/2 x 1/2	T
63	(a)..... KB-7	2000	134	176	16500	4960	7.50/20D	9.00/20	O-BLD 269	6–3 7/8 x4 1/2	269	6.3	222	100–3000	4–2.7x5 1/8	N	Own F51	5	Own R1560	SF	H	6.50–7.16	Own F470	LH4IHV	368	533	e	TX	60	8 1/4 x3 1/2 x 1/2	T
64	(a)..... KB-8	3050	137	197	20000	6485	9.00/20D	10.00/20	O-RED 361	6–4 1/2 x4 1/2	361	6.3	282	126–3000	7–3 1/4 x10 1/2	Y	Own F51	5	Own R1572	SF	H	6.43–8.51	Own F553	LH4IHV	407	709	e	PX	60	8 1/4 x3 1/2 x 1/2	T
65	(a)..... KB-10	3900	149	197	22500	7310	10.00/20D	11.00/20	Own RED401	6–4 1/2x5	401	6.3	318	140–2800	7–3 1/4 x10 1/2	Y	Own F52	5	Own R1676	SF	H	6.43–8.05	Own F653	LH4IHV	484	829	e	FX	72	9 1/4 x3 1/2 x 1/2	T

(Turn to Page 98, Please)

▽ Rear Only; Front 7.00/17.
• For shorter wheel bases—10x3 1/4 x1 1/4.
‡ Auxiliary trans. Spicer 705F, three forward speeds.
▲ Rear Only; Front 7.50/20.
▲▲ Diameter front 2.343. Center 2.375, Rear 2.406. Total length 5.750.
$ Weight of complete vehicle with 5 gal. of gas.
‡ For shorter wheel bases 8 1/2 x2 1/4 x7/32.
† Auxiliary trans. Spicer 623 1B, three forward speeds.
■ Two speed rear axle with vacuum shift and power braking.
▲ On 146" and 155" wheel bases, thickness is 1/2".
* Rear Only; Front 8.25/20.

THE NEW EXIDE BATTERIES

Extra power...extra long life...plus a low cost per mile of operation

You get all three when your trucks are equipped with Exide Batteries. And with that extra power, long life and economy, you get assurance of trustworthy performance at any season of the year.

This new, extra capacity Exide Battery is a product of vast wartime experience on automotive equipment of every kind. This valuable experience has been combined with Exide engineering and manufacturing skill to produce a battery that fleet owners can always count on for dependability, long life and ease of maintenance.

IMPORTANT NEW FEATURES

- Heavy, over-size plates.
- Greater capacity.
- Self-cleaning, non-spitting vent plugs.
- Double insulation between plates.
- "Bull's Eye" electrolyte leveling device.
- Larger, heavier inter-cell connectors.
- Hard rubber container.
- Positive cover seals.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto

(Continued from Page 96)

Line Number	MAKE AND MODEL	Chassis List Price	WHEELBASE Minimum Standard	WHEELBASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear: Standard Front and Rear	TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number, Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	Forward Sp'ds	REAR AXLE: Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES SERVICE: Make Location Type Operation	Lining Area	Drum Area	Drum Material	Hand Location Type	C-A Dimensions (Min. Std. W. B.)	FRAME: Side Rail Dimensions	Type
	Internat'al Cont'd																														
1	(a) KBR-11	5400	149	197	27000	8335	10.00/20D	12.00/20	O-RED 450	6-4½x5	450	6.3	360	148–2600	7-3¼x10	Y	Own F54	5	Tim S200P	2SF	H	6.42–8.05	Own F750	WW4IA	616	1030	G	PX	72	10x3½x⅞	T
2	..... KBR-12	6650	155	179	28500	9950	11.00/20	12.00/20	O-Con. R6596	6-4½x5⅝	586	6.0	475	200–2600	7-3¼x13⅜	Y	Own F55	5	Tim S200P	2F	H	** –6.42	Own F750	BW4IA	746	....	GS	FX	66	10x3½x⅞	C
3	..... W-3042-H	9900	179	227	30000	1214.	10.00/20	11.00/22	O-Con. S6749	6-5⅜x5½	749	6.0	554	254–2600	7-3¾x15¾	Y	Spl 7741	4	Tim S200P	2F	H	** –6.42	Own S6303	BW4IA	690	....	G	TX	84	10x3½x⅞	
4	Kenworth (D) . . 521	.....	161	215	35000	12200	10 00/20	11.00/22	Cum HB6	6-4⅞x6	672	17.	500	150–1800	7-4½x16½	Y	BL 7841	4	Tim U200P	DR	H	6.42–7.84	Tim 36000TW	Ws4IA	752	1050	a	TD	72	9½x3¼x⅞	C
5	(D) 522	.....	187	245	43000	12900	10 00/20	11.00/22	Cum HB6	6-4⅞x6	672	17.	500	150–1800	7-4½x16½	Y	BL 7841	4	Tim U200P	.....	.....	.....	Tim 36000TW	Ws4IA	1135	.....	.....	.....	.....	9½x3¼x⅞	.....
6	 587	.....	150	215	30000	10130	10.00/20	11.00/22	Bu LO525	6-4½x5½	525	5.5	385	150–2200	7-3x11½	Y	Fu 5A620	5	Tim U200P	.....	.....	.....	Tim 35100TW	Ws4IA	752	.....	.....	.....	.....	9½x3¼x⅞	.....
7	Mar. Her. . DVL-1	.....	90	118	8200	4200	7.50/16S	8.25/18S	Willys MB	4-3½x4½	134	6.4	105	60–4000	3-2.33x5.48	Y	Own	3	(Front Drive)	.....	.....	7.10	Own	4IH	202	327	M2	.....	.....	None	.....
8	Reo 19A	.....	125	125	14000	▲4840	7.50/20	8.25/20	Own GC245	6-3½x4¼	245	6.2	191	89–3100	7-2⅛x10.7	Y	WG T97	4	Tim 53000	SBF	H	5.66–6.16	Tim 30000	T 4IVH▼	311	483	Co	TX	64⅝	8⅞x2‡‡x⅝	T
9	..... 19AT	.....	125	125	14000	▲5280	8.25/20	8.25/20	Own GC245	6-3½x4¼	245	6.2	191	89–3100	7-2⅛x10.7	Y	WG T97	4	Tim 93000	dF	H	6.03–8.00	Tim 30000	T 4IVH▼	311	483	Co	TX	64⅝	8⅞x2‡‡x⅝	T
10	..... 19B	.....	145	145	14000	▲5000	7.50/20	8.25/20	Own GC245	6-3½x4¼	245	6.2	191	89–3100	7-2⅛x10.7	Y	WG T97	4	Tim 53000	SBf•	H	5.66–6.16	Tim 30000	T 4IVH▼	311	483	Co	TX	84⅝	8⅞x2‡‡x⅝	T
11	..... 19C	.....	165	165	14000	▲5040	8.25/20	8.25/20	Own GC245	6-3½x4¼	245	6.2	191	89–3100	7-2⅛x10.7	Y	WG T97	4	Tim 53000	SBf•	H	5.66–6.16	Tim 30000	T 4IVH▼	311	483	Co	TX	104⅝	8⅞x2‡‡x⅝	T
12	..... 21T	.....	130	130	18000	▲6380	9.00/20	9.00/20	Own GC288	6-3½x5	288	6.2	225	96–3000	7-2⅛x10.7	Y	Cla 205V	5	Tim 55000	dF	H	6.08–8.12	Tim 31000	T 4IVH▼	344	583	Co	TX	69⅝	9⅛x3⅛	T
13	..... 21B	.....	145	145	18000	▲6080	8.25/20	9.00/20	Own GC288	6-3½x5	288	6.2	225	96–3000	7-2⅛x10.7	Y	Cla 205V	5	Tim 55000	SBf•	H	** –6.28	Tim 31000	T 4IVH▼	344	583	Co	TX	104⅝	9x3x¼	C
14	..... 21C	.....	165	165	18000	▲6180	9.00/20	9.00/20	Own GC288	6-3½x5	288	6.2	225	96–3000	7-2⅛x10.7	Y	Cla 205V	5	Tim 55000	SBf•	H	** –6.28	Tim 31000	T 4IVH▼	344	583	Co	TX	104⅝	9x3x¼	C
15	..... 22T	.....	130	130	20500	▲6630	9.00/20	9.00/20	Own GC310	6-3⅝x5	310	6.2	243	101–3000	7-2⅛x10.7	Y	Cla 205V	5	Tim 96000	dF	H	6.08–8.12	Tim 31000	T 4IVH▼	344	583	Co	TX	84⅝	9⅛x3⅛	C
16	..... 22B	.....	145	145	20500	▲6410	9.00/20	9.00/20	Own GC310	6-3⅝x5	310	6.2	243	101–3000	7-2⅛x10.7	Y	Cla 205V–VO	5	Tim 76000	2F	H	6.16–7.3	Tim 31000	T 4IVH▼	344	583	Co	TX	104⅝	9⅛x3⅛	C
17	..... 22C	.....	165	165	20500	▲6380	9.00/20	9.00/20	Own GC310	6-3⅝x5	310	6.2	243	101–3000	7-2⅛x10.7	Y	Cla 205V	5	Tim 56000	SBF	H	** –6.16	Tim 31000	T 4IVH▼	344	583	Co	TX	124⅝	9⅛x3⅛	C
18	..... 22L	.....	185	185	20500	▲6380	9.00/20	9.00/20	Own GC310	6-3⅝x5	310	6.2	243	101–3000	7-2⅛x10.7	Y	Cla 205V	5	Tim 56000	SBF	H	** –6.16	Tim 31000	T 4IVH▼	344	583	Co	TX	124⅝	9⅛x3⅛	C
19	..... 23T	.....	130	130	23000	▲8180	10.00/20	10.00/20	Con B6371	6-4¼x4⅝	371	6.0	279	100–2600	7-2⅛x13½	Y	Cla 270VO	5	Tim 98415	dF	H	6.53–8.53	Tim 32000	W s4IA	514	747	G	TX	69⅝	9⅛x3⅛	C
20	..... 23B	.....	145	145	23000	▲7380	10.00/20	10.00/20	Con B6371	6-4¼x4⅝	371	6.0	279	100–2600	7-2⅛x13½	Y	Cla 270VO	5	Tim 72000	2F	H	** –8.4	Tim 32000	T 4IVH▼	370	644	G	TX	84⅝	9⅛x3⅛	C
21	..... 23L	.....	185	185	23000	▲7510	10.00/20	10.00/20	Con B6371	6-4¼x4⅝	371	6.0	279	100–2600	7-2⅛x13½	Y	Cla 270VO	5	Tim 58000	SBF	H	** –7.8	Tim 32000	T 4IVH▼	370	644	G	TX	124⅝	9⅛x3⅛	C
22	..... 25T	.....	130	130	27400	▲8660	10.00/20	10.00/20	Con B6427	6-4¼x4½	427	5.9	324	127–2700	7-2½x13‡‡	Y	Cla 270V–VO	5	Tim 98415	dF	H	6.53–8.53	Tim 35000	W s4IA	514	744	G	TX	69⅝	9⅛x3⅛	C
23	...25BL & 25BT	.....	145	145	27400	▲9360	10.00/20	10.00/20	Con B6427	6-4¼x4½	427	5.9	324	127–2700	7-2½x13‡‡	Y	Cla 270VO&■	15	T-S-200P	2F	H	** –7.84	Tim 35000	W s4IA	660	952	G	TD	84⅝	9⅛x3⅛	CP
24	..... 25B	.....	145	145	27400	▲8570	10.00/20	10.00/20	Con B6427	6-4¼x4½	427	5.9	324	127–2700	7-2½x13‡‡	Y	Cla 270VO	5	T-S-200-P	2F	H	** –7.84	Tim 35000	W s4IA	660	952	G	TX	84⅝	9⅛x3⅛	C
25	..... 25L	.....	185	185	27400	▲8700	10.00/20	10.00/20	Con B6427	6-4¼x4½	427	5.9	324	127–2700	7-2½x13‡‡	Y	Cla 270V	5	T-S-200-P	2F	H	** –7.84	Tim 35000	W s4IA	660	952	G	TX	124⅝	9⅛x3⅛	C
26	Sterling HD97	.....	148	175	24000	9150	9.00/20	11.00/20	Wau 6MZA	6-4¼x4¾	404	5.6	290	130–3000	7-2⅝x12½	Y	Fu 5A43	5	Tim Q100DPH	FHy	R	5.29–7.80	Tim 35011H	T4IHV	466	822	A	TX	67	9x7x¼	A
27	..... HD105	.....	148	175	24000	9550	10.00/20	11.00/22	Wau 6MZA	6-4¼x4¾	404	5.6	290	130–3000	7-2⅝x12½	Y	Fu 5A43	5	Tim R100DPH	FHy	R	5.29–7.40	Tim 35011H	T4IHV	524	926	A	TX	67	9x3¼x¼	A
28	..... HD115	.....	148	175	32000	10650	10.00/20	11.00/24	Wau 6SRKR	6-4⅝x5½	517	5.5	368	125–2250	7-3x13⅞	Y	Fu 5A62	5	Tim 8200P	2F	R	7.77–8.53	Tim 36000TW	W s4IA	722	1054	A	TX	67	9x3¼x¼	A
29	..... HD145	.....	148	175	36000	11250	11.00/20	12.00/24	Wau 6SRKR	6-4⅝x5½	517	5.5	368	125–2250	7-3x13⅞	Y	Fu 5A62	5	Tim 79721W	2F	R	7.69–11.36	Tim 36000TW	W s4IA	722	1054	A	TX	67	9x3¼x¼	A
30	(D) HD115H	.....	158	185	32000	11950	10.00/20	11.00/24	Cum HB600	6-4⅞x6	672	17.	500	150–1800	7-4½x16½	Y	Fu 4B86	4	Tim 8200P	2F	R	7.77–8.53	Tim 36000TW	W s4IA	614	922	A	TX	68	9¼x3⅝x⅜	A
31	(D) HD145H	.....	158	185	36000	12550	11.00/20	12.00/24	Cum HB600	6-4⅞x6	672	17.	500	150–1800	7-4½x16½	Y	Fu 4B86	4	Tim 79721W	2F	R	7.69–11.36	Tim 36000TW	W s4IA	614	922	A	TX	68	9¼x3⅝x⅜	A
32	..... HC97	.....	148	175	24000	9200	9.00/20	11.00/20	Wau 6MZA	6-4¼x4¾	404	5.6	290	130–3000	7-2⅝x12½	Y	Fu 5A43	5	Own 97H	CS	R	6.70–10.82	Tim 35011H	T4IHV	540	842	A	TX	67	9x7x¼	A
33	..... HC105	.....	148	175	28000	9700	10.00/20	11.00/22	Wau 6MZA	6-4¼x4¾	404	5.6	290	130–3000	7-2⅝x12½	Y	Fu 5A43‡	15	Own 137H	CS	R	6.70–10.82	Tim 35011H	TL4IHV	540	842	A	TX	67	9x3¼x¼	A
34	..... HC115	.....	148	175	32000	10350	10.00/20	11.00/24	Wau SRKR	6-4⅝x5½	517	5.5	368	125–2250	7-3x13⅞	Y	Fu 5A62‡	15	Own 137W	CS	R	6.70–10.82	Tim 36000TW	W s4IA	648	974	A	TX	67	9x3¼x¼	A
35	..... HC144	.....	148	175	36000	11250	10.00/22	12.00/24	Wau 6SRKR	6-4⅝x5½	517	5.5	368	125–2250	7-3x13⅞	Y	Fu 5A62‡	15	Own 148W	CS	R	6.70–10.82	Tim 36000TW	W s4IA	708	1042	A	TX	67	9¼x3⅝x⅜	A
36	..... HC147	.....	148	175	36000	11500	10.00/22	12.00/24	Wau 6SRKR	6-4⅝x5½	517	5.5	368	125–2250	7-3x13⅞	Y	Fu 5A62‡	15	Own 147W	CS	R	6.70–10.82	Tim 36000TW	W s4IA	708	1042	A	TX	67	9¼x3⅝x⅜	A
37	..... HC175	.....	167	185	45000	14600	12.00/24†	14.00/24‡	Wau 145GK	6-5¼x6	779	6.2	585	186–2100	7-3½x17¾	Y	Fu 4B86•	12	Own 175W	CS	R	7.31–12.42	Tim 27454W	W s4IA	786	1152	A	TX	68	9¼x3⅝x⅜	A
38	..... HC250	.....	178	190	60000	18400	14.00/24‡	14.00/24‡	Wau 145GK	6-5¼x6	779	6.2	585	186–2100	7-3½x17¾	Y	Fu 4B86•	12	Own 251W	CS	R	7.31–12.42	Tim 27454W	W s4IA	786	1152	A	JX	95	12x3½x3⅛	AL
39	(D) HC115H	.....	167	185	32000	12250	10.00/20	11.00/24	Cum HB600	6-4⅞x6	672	17.	500	150–1800	7-4½x16½	Y	Fu 4B86•	12	Own 137W	CS	R	6.70–10.82	Tim 36000TW	W s4IA	648	974	A	TX	68	9x3¼x¼	A
40	(D) HC175H	.....	167	185	45000	14930	12.00/24†	14.00/24‡	Cum HBD600	6-4⅞x6	672	17.	500	150–1800	7-4½x16½	Y	Fu 4B86•	12	Own 175W	CS	R	7.31–12.42	Tim 27454W	W s4IA	786	1152	A	TX	68	9¼x3⅝x⅜	
41	(D) HC250H	.....	178	190	60000	18700	14.00/24‡	14.00/24‡	Cum HBD600	6-4⅞x6	672	17.	500	150–1800	7-4½x16½	Y	Fu 4B86•	12	Own 251W	CS	R	7.31–12.42	Tim 27454W	W s4IA	786	1152	A	JX	95	12x3½x3⅛	AL
42	Studebaker M5	.....	113	113	4500	2120	6.50/16S	6.50/16S	Own 1M	6-3x4	170	6.5	134	80–4000	4-2⅞x5⅞	N	Own 664949	3	Own 663597	Hy▼	H	** –4.82	Own 664307	L4IH	157	276	Co	2I	45‡‡	7⅞x2⅞x⅞	T
43	..... M15A-20	.....	120	120	7800	2960	7.00/17S	7.50/17	Own 2M	6-3x4	170	6.5	134	80–4000	4-2⅞x5⅞	N	Own 673674	4	Own 664435	SF	H	5.66–6.60	Own 676461	L4H4IH	216	342	a	TX	52‡‡	7‡‡x2‡‡x⅞	T
44	..... M15A-28	.....	128	128	10000	3060	7.50/17S	7.00/20	Own 2M	6-3x4	170	6.5	134	80–4000	4-2⅞x5⅞	N	Own 673674	4	Own 665171	SF	H	5.66–6.66	Own 664452	L4H4IH	280	442	Co	TX	60‡‡	8⅛x2‡‡x⅞	T
45	..... M16	.....	128	195	13500	3630	7.00/20D	8.25/20	Own 3M	6-3⅞x4½	226	6.5	176	94–3600	4-2½x5‡‡	N	Own 674989	4	Own 665171	SF	H	5.66–6.66	Own 664452	L4H4IH	280	442	Co	TX	60‡‡	8⅛x2‡‡x⅞	T
46	..... M16(2–8p)	.....	128	195	15000	3955	7.00/20D	8.25/20	Own 3M	6-3⅞x4½	226	6.5	176	94–3600	4-2½x5‡‡	Y	Own 676055	HyF	H	6.13–8.10	Own 664452	L4H4IH	280	442	Co	TX	60‡‡	8⅛x2‡‡x⅞	
47	Truckstell(C) F18-5	.....	140	194	18500	▲5265	7.50/20°	10.00/20	Ford	8-3⅞x3¾	239	6.4	180	100–3800	3-2⅛x4.71	N	Ford & BL	12	Cla R1300	SF	H	5.67–6.83	Ford	L4IHV	355	610	a	TX	65¾	7½x3x.47	CTf
48	(C) F19-5-0	.....	108	166	19500	▲5265	7.50/20°	10.00/20	Ford	8-3⅞x3¾	239	6.7	180	100–3800	3-2⅛x4.71	N	Ford & BL	12	Cla R1300	SF	H	5.67–6.83	Ford	L4IHV	355	610	a	TX	65¾	7½x3x.47	CTf
49	(C) C18-5	.....	144	197	18500	▲5395	7.50/20°	9.00/20	Chevrolet	6-3⅞x3½	235	6.6	192	93–3100	4-2¾x5⅞	N	Chev & BL	12	Cla R1300	SF	H	5.67–6.83	Chevrolet	L4IHV	355	610	a	TD	67	7½x3x.47	CTf
50	(C) C19-5-0	.....	114	173	19500	▲5395	7.50/20°	9.00/20	Chevrolet	6-3⅞x3½	235	6.6	192	93–3100	4-2¾x5⅞	N	Chev & BL	12	Cla R1300	SF	H	5.67–6.83	Chevrolet	L4IHV	355	610	a	TD	67	7½x3x.47	CTf
51	Ward La Fr. . . D-1	.....	149	220	25000	9500	10.00/20	11.00/20	Con B6427	6-4⅞x4⅞	427	6.1	325	127–.....	7-2⅞x13½	Y	Fu 5A430	5	Tim 58415PA	B	R	** –6.14	Tim 35011TW	W s4A	600	928	c	TM	68¼	9⅞x3x¼	.....
52	..... D-1B	.....	149	220	25000	9500	10.00/20	11.00/20	Con 22R	6-4½x5¼	5015	5.4	384	148–.....	7-2¼x14½	Y	Fu 5A620	5	Tim 58415PA	B	R	** –6.14	Tim 35011TW	W s4A	600	928	c	TM	68¼	9⅞x3x¼	.....
53	..... D-1C	.....	149	220	29000	9500	11.00/20	11.00/24	Con B6427	6-4⅞x4⅞	427	6.1	325	127–.....	7-2⅞x13½	Y	Fu 5A430	5	Tim 8-200P	82	R	** –7.84	Tim 35011TW	W s4A	673	1031	c	TM	68¼	9⅞x3x¼	.....
54	..... D-2	.....	149	220	29000	12000	11.00/20	11.00/22	Con R6513	6-4½x5½	513	5.9	400	170–.....	7-3¼x14½	Y	Fu 5A620	5	Tim 8-200P	82	R	** –7.84	Tim 35011TW	W s4A	673	1031	c	TM	68¼	10x3x⅞	.....
55	..... D-3	.....	149	220	34000	12000	11.00/22	12.00/24	Con R6572	6-4¾x5½	572	5.9	440	189–.....	7-3¼x14½	Y	Fu 5A650	5	Tim U200P	82	R	** –7.84	Tim 26458W	W s4A	750	1159	c	TM	68¼	10x3x⅞	.....
56	(D) D-5	.....	149	149	35000	12500	11.00/22	12.00/24	Con HB600	6-4⅞x6	672	17.	500	150–.....	7-4½x16¾	Y	Fu 5A650	5	Tim U200P	82	R	** –6.42	Tim 26458W	W s4A	750	1159	c	TM	68¼	10x3x⅞	
	Four-Wheel-Drive																														
57	Willys (Sd.Del.) 463	1285♦	104	104	4000	♦2752	6.50/15S	.....	Own 463	4-3½x4⅜	134	6.5	105	63–4000	3-2.33xo 48	N	WG T96	3	Spl 23–1	Hy½	H	4.88–5.38	Own I Tr	B4IH	133	220	a	2I	.....	5x2¼x.063	TfD
58	Willys 2WD	1195♦	118	118	5300	▲2788	6.50/16S	7.00/16S	Own 2WD	4-3½x4½	134	6.5	105	60–4000	3-2.33x5.48	N	WG T90E	3	Tim51540NX2	S½	H	5.38–6.17	Cla F-154	B4IH	176	276	a	2I	42.28	5½x2x⅞	TD
59	Corbitt 22FG	.....	159	Opt	22000	.....	9.00/20	10.00/20	Con B6371	6-4½x4⅝	371	6.0	280	100–2600	7-2⅛x13½	Y	Fu 5A43	5	Tim R2090H	2F	H	** –8.43	Tim F2090H	L4IHV	....	868	a	TD	74	9x3x¼	DL
60	Dodge ..... WDX	.....	126	126	8700	.....	7.50/16S	9.00/16S	Own T-137	6-3¼x4⅝	230	6.7	185	94–3200	4-2½x4.8	Y	NP 38580	4	Own T137	HyF	H	4.89–5.83	Own T137	O4IH	210	311	Co	TX	52‡‡	6¼x2⅞x⅞	T
61	FWD ..... HA	.....	132	156	17000	▲7470	8.25/20D	10.00/20	Wau BZ	6-4x4¼	320	5.9	223	95–2800	7-2¼x10¼	Y	Own H	5	Own H	SF	H	6.6 –9.06	Own H	L4IHV	391	807	a	T4	79½	9x3x¼	T
62	..... HR	.....	132	154	20000	▲8000	9.00/20	10.00/20	Wau MZA	6-4¼x4¾	404	5.6	291	129–2800	7-2½x12¾	Y	Own H	5	Own H	SF	H	6.6 –9.06	Own H	L4IHV	391	807	a	T4	79½	9x3x¼	T
63	..... HG	.....	154	154	20000	▲8050	9.00/20	10.00/20	Wau MZA	6-4¼x4¾	404	5.6	291	129–2800	7-2½x12¾	Y	Own H	5	Own H	SF	H	6.6 –9.06	Own H	L4IHV	391	807	a	T4	89¾	7⅞x3x‡‡	C
64	..... 8U	.....	150	182	25000	▲10420	11.00/20D	11.00/20	Wau SRKR	6-4⅝x5½	517	5.5	365	126–2400	7-3x13⅞	Y	Own U	5	Own U	BF	H	6.7 –9.8	Own U	L4IHV	512	867	a	T4	90	7⅞x3x‡‡	C
65	..... 8U‡	.....	150	182	28000	▲10570	11.00/20D	11.00/20	Wau SRKR	6-4⅝x5½	517	5.5	365	126–2400	7-3x13⅞	Y	Own U	5	Own U	BF	H	6.7 –9.8	Own U	L4IHV	512	867	a	T4	90	8x3x‡‡	C
66	..... M7	.....	150	180	38600	▲15400	12.00/20D	12.00/20	Wau 145GK	6-5¼x6	779	6.2	585	186–2000	7-3½x17¾	Y	Own M	10	Tim 1758	2F	H	** –7.33	Wis F409	W s4IA	578	976	a	T4	90	10⅞x3x‡‡	C
67	(D) M7D	.....	150	180	38600	▲15700	12.00/20D	12.00/20	Bu DC844	6–5¼x6½	844	...	605	180–1800	7-3¾x17	Y	Own M	10	Tim 1758	2F	H	** –7.33	Wis F409	W s4IA	578	976	a	T4	90	10⅞x3x‡‡	C
68	(D) M10D	.....	150	180	44000	▲16400	11.00/24D	12.00/24	Bu DC844	6–5¼x6½	844	...	605	180–1800	7-3¾x17	Y	Own M	10	Tim 79721	2F	H	** –7.7	Wis F409	W s4IA	614	1030	a	T4	90	10⅞x3x‡‡	C

(Turn to Page 100, Please)

▲ Includes Cab.
† Rear only; Front 11.00/24.
‡ Rear only; Front 12.00/24.
§ Rear only; Rear 8.25/20.
‖ Auxiliary transmission, Own OJ.
¶ Auxiliary transmission Own FJ.
• 2-Speed Axle Available.
▼—Lockheed Type Front and Timken Dual Primary Rear Brakes.
■ 6031 Auxiliary Transmission.
♦ Complete vehicle.

For minimum wear, also...

NOT 2...

NOT 6...

but 26 basic designs

OF SEALED POWER PISTON RINGS

Minimum wear is one of the BIG FOUR requirements for BALANCED PERFORMANCE in piston rings. In Sealed Power Individually Engineered Ring Sets you are sure of all four—*oil control, blow-by control, low friction* and *minimum wear*. Each Sealed Power Set is made up from twenty-six (26) basic designs of piston rings. Whatever the make, model or cylinder wear condition, there's a Sealed Power Set specifically engineered to do the best possible job. Sealed Power has been refining these sets for seven years, has been producing rings for cars, truck and engine builders 35 years. For balanced performance, re-power with Sealed Power motor parts. Sold by leading distributors. SEALED POWER CORPORATION, Muskegon, Michigan and Stratford, Ontario.

Piston Rings, Pistons, Cylinder Sleeves, Piston Pins, Valves, Water Pumps, Bolts, Bushings, Tie Rods, Front End Parts

INDIVIDUALLY ENGINEERED

SEALED POWER PISTON RINGS

BEST IN NEW TRUCKS! ★ BEST IN OLD TRUCKS!

Keep your War Bonds! Get $4 for $3!

(Turn to Page 100, Please)

(Continued from Page 98)

Line Number	MAKE AND MODEL	Chassis List Price	WHEELBASE Minimum Standard	WHEELBASE Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES D-dual rear S-single rear Standard Front and Rear	TIRE SIZES Maximum Speed Tires (Duals unless noted)	ENGINE DETAILS Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings Number, Diameter and Length	Governor Standard	TRANSMISSION Make and Model	Forward Sp'ds	REAR AXLE Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High	FRONT AXLE Make and Model	BRAKES SERVICE Make Location Type Operat'n	BRAKES SERVICE Lining Area	BRAKES SERVICE Drum Area	BRAKES SERVICE Drum Material	BRAKES Hand Location Type	C-A Dimension (Min. Std. W. B.)	FRAME Side Rail Dimensions	FRAME Type
1	Marmon- MH440-4	.....	158	170	22500	▲8700	9.00/20D	10.00/20	Her WXLC3	6-4¼x4¾	404	5.4	293	118-2800	7-2½x13¼	Y	Fu 5A430	5	Tim R2090W	2B	H	** -8.43	Tim F2090W	W....A	584	887	c	F	72	9½x3x¼	T
2	Herr...MH555-4	.....	161	173	28000	▲10200	10.00/20D	11.00/20	Her RXC	6-4⅝x5¼	529	6.3	390	131-2200	7-3x13¼	Y	Fu 5A620	5	Tim R3100W	2B	H	** -8.15	Tim F3100W	W....A	692	1039	c	F	72	10⅛x3x⅜	T
3	(C).....CM5-4	.....	134	134	13500	▲4847	7.50/20D	7.50/20	Ford	8-3⅛x3¾	239	6.4	176	100-3500	3-2½x4.71	N	Ford	4	Ford	S	H	** -6.67	Own M5	F....H	302	563	a	F	60⅛	7x2¾x⅜	T
4	(C).....CM6-4	.....	158	158	13500	▲4973	7.50/20D	7.50/20	Ford	8-3⅛x3¾	239	6.4	176	100-3500	3-2½x4.71	N	Ford	4	Ford	S	H	** -6.67	Own M5	F....H	303	563	a	F	84⅛	7x2¾x⅜	T
5	(C).....LD6P-4	.....	114	....	.....	.....	15▼	15▼	Ford	8-3⅛x3¾	239	6.4	176	100-3500	3-2½x4.71	N	Ford	4	Ford	S	T	** -4.11	Own O	F....H	162	....	A	F	.....	.....	X
6	(C).....LD6-4	.....	114	....	4700	▲2719	15▼	15▼	Ford	8-3⅛x3¾	239	6.4	176	100-3500	3-2½x4.71	N	Ford	4	Ford	S	H	** -4.11	Own O	F....H	162	....	A	F	40⅛	5½x2¼x⅛	T
7	(C).....OT5-4	.....	122	....	6800	▲3972	7.50/17	7.50/17	Ford	8-3⅛x3¾	239	6.4	176	100-3500	3-2½x4.71	N	Ford	4	Ford	S	H	** -4.86	Own I	F....H	186	....	A	F	48	6x2¼x⅛	T
8	Oshkosh....W-307	.....	149	204	23600	10200	10.00/20	11.00/20	Her WXLC3	6-4¼x4¾	404	6.3	310	118-2500	7-2½x13¼	Y	Fu 5A43	5	Tim 58300	SF	H	** -7.8	Own W307	L41I	560	867	G	TX	82	8¼x3x⅜	TF
9	.....W1700	.....	150	205	28000	11000	11.00/20D	12.00/208	Her RXC	6-4⅝x5¼	529	5.4	380	128-2200	7-3x13¼	Y	Fu 5A620	5	Own W1700	2F	H	** -6.4	Own 1700	L4IH	630	975	G	TX	82	8¼x3x⅜	TF
10	.....W-700	.....	150	204	30000	▲12000	11.00/20	12.00/208	Her RXCO	6-4⅝x5¼	529	5.4	380	128-2200	7-3x12½	Y	Fu 5A620	5	Own W700	2F	H	** -6.6	Own W700	L4IH	630	975	G	TX	82	10⅛x3x⅜	TF
11	.....W-703	.....	150	204	30000	▲12200	11.00/20	12.00/208	Her RXLD	6-4¼x5¼	558	5.4	405	141-2200	7-3½x13¼	Y	Fu 5A620	5	Own W700	2F	H	** -6.6	Own W700	L4IH	630	975	G	TX	82	10⅛x3x⅜	TF
12	(D).....W-906	.....	158	190	38000	▲14900	12.00/20	14.00/208	Cum HB600	6-4⅛x6	672	...	500	150-1800	7-4½x16	Y	Fu 4A86	12	Own W2200	2F	H	** -6.14	Own 2200	LT4IA	645	975	G	TX	90	10½x3½x⅝	TF
13	.....W2200	.....	160	181	40000	16500	13.00/20D	14.00/208	Bu MO779	6-5¼x6	779	...	575	188-2100	7-3¾x17	Y	Fu 4A86	12	Own W2200	2F	H	** -6.14	Own 2200	LT4IA	645	975	G	TX	90	10½x3½x⅝	TF
14	.....W2201	.....	160	181	40000	16500	13.00/20D	14.00/208	Bu MO893	6-5⅝x6	893	...	625	200-1800	7-3¾x17	Y	Fu 4A86	12	Own W2200	2F	H	** -6.14	Own 2200	LT4IA	645	975	G	TX	90	10½x3½x⅝	TF
15	(D).....W2204	.....	160	181	46000	18500	13.00/20D	14.00/24	Bu 6DC844	6-5¼x6	844	...	605	180-1800	7-3¾x17	Y	Fu 4A86	12	Own W2204	2F	H	** -6.4	Own 2204	LT4IA	740	1190	G	TX	90	10½x3½x⅝	TF
16	Peterbilt(D)270DD	10848	165	Opt	27000	12500	10.00/20D	11.00/22	Cum HB600	6-4⅛x6	672	17.	500	150-1800	7-4½x16½	Y	Spl 7741	12	U-200P	2F	R	** -6.42	Tim 36000W	Ws41A	800	1250	a	FD	80½	10⅜x3½x⅛	TL
17	Sterling....DD115	.....	160	178	32000	11500	10.00/20	11.00/24	Wau 6SRKR	6-4⅝x5½	517	5.5	368	125-2250	7-3x13¾	Y	Fu 5A62†	10	Tim 1357W	2F	R	6.65-8.6	Tim F3110W	Ws41A	644	984	A	TX	76	9x3¼x¼	A
18	(D).....DD145H	.....	167	185	36000	13900	11.00/20	12.00/24	Cum HB600	6-4⅛x6	672	17.	500	150-1800	7-4½x16½	Y	Fu 4A86‡	10	Tim 1758W	2F	R	7.33-10.3	Tim F409CW	Ws41A	644	984	A	TX	77	9¼x3½x⅜	A
19	Walter(c.f.)....FN	.....	126	150	20000	7500	9.00/20D	10.00/208	Wau MZA	6-4¼x4¾	404	5.6	290	125-2600	7-2½x12½	Y	Own FN	6	Own FNB	2	H	6.0-8.0	Own FN	O4IA	470	670	G	FI	84	7x2¼x¼	C
20	(c.f.)...FZM	.....	126	150	24000	8500	10.00/20D	12.00/208	Wau MZA	6-4¼x4¾	404	5.6	290	125-2600	7-2½x12½	Y	Own FN	6	Own FMB	2	H	6.0-8.0	Own FJ	O4IA	470	670	G	FI	84	12x3½x½	B
21	(c.f.)...FCK	.....	126	138	30000	10500	10.00/24D	11.00/248	Wau 8RKR	6-4⅝x5½	517	5.5	365	125-2200	7-3x13¾	Y	Own FC	6	Own FCB	2	H	7.5-9.0	Own FC	O4IA	585	890	D	FI	84	13x3¾x½	B
22	(c.f.)....FC	.....	138	162	32000	11000	11.00/24D	12.00/248	Wau 8RKR	6-4⅝x5½	517	5.5	365	125-2200	7-3x13¾	Y	Own FC	6	Own FCB	2	H	7.5-9.0	Own FCR	O4IA	585	890	D	FI	96	14x3¾x½	B
23	(c.f.)...FGB	.....	126	162	32000	12000	11.00/24D	12.00/248	Wau 145GK	6-5¼x6	779	5.7	580	185-2000	7-3½x17¾	Y	Own FA	6	Own FCB	2	H	7.5-9.0	Own FCR	O4IA	585	890	D	FI	84	14x3¾x½	B
24	(c.f.)...FGR	.....	126	162	42000	13000	12.00/24D	12.00/24	Wau 145GK	6-5¼x6	779	5.7	580	185-2000	7-3½x17¾	Y	Own FA	6	Own FCR	2	H	7.5-9.0	Own FCR	O4IA	585	890	D	FI	89	14x3¾x½	B
25	Willys Unv. Jp...CJ-2A	*1146	80	80	3500	‡1646	6.00/16	7.00/15	Own CJ-2A	4-3½x4½	134	6.5	105	60-4000	3-2.33x5.48	N	WG T90A	6°	Spl 41-2	Hy‡	H	** -5.38	Spl 25	B41H	118	198	a	F		4x1¼x⅛	P
26	.....4WD	.....	118	118	5300	2920*	7.00/16	.....	Own 4WD	4-3½x4½	134	6.5	105	60-4000	3-2.33x5.48	Y	NGT90A	6°	Tm 51540NXZ	8½	H	** -5.38	Spl 25	B41H	176	276	2	2I	42-28	5½x2x⅛	TD
	Six-Wheelers Wheels Driven‡ ▼																														
27	Federal....663MA	.....	189	225	40000	14500	10.00/20	10.00/22	Con R6602	6-4⅞x5½	602	6.1	464	200-2600	7-3¼x14½	Y	Fu 5A65▼	15	T SW3012P	WF	R	** -6.16	Tim 36000TW	Ws6IA	1082	1569	a	TD	108	10½x3¼x⅛	T
28	.....664MAB	.....	189	225	55000	15850	11.00/22	12.00/20	Con R6602	6-4⅞x5½	602	6.1	464	200-2600	7-3¼x14½	Y	Spl 7741▼	12	Tim SW456P	WF	R	** -7.6	Tim 27452W	Ws6IA	1308	1888	a	TD	108	10½x3¼x⅛	T
29	.....664MA	.....	189	225	55000	1o950	11.00/22	12.00/20	Con R6602	6-4⅞x5⅝	602	6.1	464	200-2600	7-3¼x14½	Y	Spl 7741▼	12	Tim SD462P	BR	R	** -8.15	Tim 27452W	Ws6IA	1092	1624	a	TD	108	10½x3¼x⅛	T
30	F.W.D.....M6x6	.....	243	276	58000	▲21400	11.00/24D	11.00/24	Wau 145GK	6-5¼x6	779	6.2	585	186-2000	7-3½x17¾	Y	Fu 5A920	10	Wis SD462	2F	L	** -10.6	Wis F409	Ws6IA	1080	1680	a	T6	183	10⅛x3x⅜	P
31	(D)....M6X6D	.....	180	276	58000	▲21600	11.00/24D	11.00/24	Bu DC844	6-5¼x6½	844	...	605	180-1800	7-3¾x17	Y	Fu 5A920	10	Wis SD462	2F	L	** -10.6	Wis F409	Ws6IA	1080	1680	a	T6	216	10⅛x3x⅜	P
	International (2)																														
32	.....KB-6F.4R	3100	151	194	22000	6915	7.00/20D	8.25/20	Own BLD250	6-3⅛x4½	251	6.3	200	100-3200	4-2⅜x5⅜	N	Own F51	5	Own RF1450	8F	H	6.16-6.66	Own F470	LH4IHV	495	869	c	PX	77	8⅛x⅛x⅛	T
33	.....KB-8F.4R	4700	161	215	27000	8575	8.25/20D	9.00/20	Own RED361	6-4½x4½	361	6.3	282	126-3000	7-3¼x10⅜	N	Own F52	5	Own RF1560	8F	H	6.50-7.16	Own F550	LH6IHV	644	1105	c	PX	84	9½x3⅛x⅛	T
34	.....KB-11F.4R	6750	161	215	37000	10830	9.00/20D	10.00/20	Own RED450	6-4⅝x5	451	6.3	360	148-2600	7-3¼x10⅜	N	Own F54	5	Own RF1670	8F	H	** -7.16	Own F760	TW6IA	738	1179	G	FX	84	10½x3⅛x⅝	T
35	.....W-4064H	12600	203	239	40000	15360	10.00/22	11.00/22	O-Con. 86749	6-5⅝x5½	749	6.0	554	254-2600	7-3¾x15¾	Y	Spl 7741	4	Tim SW3012	WF	H	** -6.16	Own S6303	BW6IA	1168	....	G	FX	108	10x3½x⅛	C
36	Ken- (D)523.4R	.....	193	241	41000	14600	10.00/20	11.00/22	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7841	4	Ti SW3012PA	WF	R	** -6.16	Tim 36000	Ws4rIA	924	1248	a	TD	102	9½x3¼x⅛	C
37	worth(D)524.4R	.....	193	241	54000	15100	10.00/20	11.00/22	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7841	4	Tim SW452	WF	R	6.0 -7.6	Tim 36000	Ws4rIA	819	1192	a	TD	102	9½x3¼x⅛	C
38	.....528.4R	.....	186	234	40000	12500	10.00/20	10.00/22	Bud L0525	6-4½x5½	525	5.5	385	150-2200	7-3x11½	Y	Fu 5A620	5	Ti SW3012PA	WF	R	** -6.16	Tim 35100	Ws4rIA	924	1248	a	TD	102	9½x3¼x⅛	C
39	.....532.4R	.....	186	234	35000	12500	10.00/20	10.00/22	Wau 6MZA	6-4¼x4¾	404	5.9	300	125-2500	7-2¾x12½	Y	Fu 5A430	5	Ti SW3012PA	WF	R	** -6.16	Tim 35100	Ws4rIA	924	1248	a	TD	102	9½x3¼x⅛	C
40	.....(D)548.4R	.....	193	241	54000	17000	11.00/22	12.00/24	Cum HB6	6-4⅞x6	672	17.	500	150-2200	7-4½x16½	Y	BL 7841	4	Tim SD462	DR	R	** -8.15	Tim 36000	Ws4rIA	819	1192	a	TD	109	9½x3¼x⅛	dbC
41	.....(D)552.4R	.....	255	255	54000	20700	13.00/24	13.00/24	Cum HB6	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	BL 7841	4	Tim SD462W	WF	R	** -8.15	Tim F3200W	Ws4rIA	1109	1192	a	TD	168	9½x3¼x⅛	dbC
	Marmon-Herr.																														
42	(C).....CM5-6	2790	156	....	22500	▲6673	7.50/20D	7.50/20	Ford	8-3⅛x3¾	239	6.4	176	100-3500	3-2½x4.71	N	Ford	4	Timken	S	H	** -6.67	Own M5	M	503	....	a	F	82⅛	7½x3x¼	C
43	(C).....CM6-6	2822	180	....	22500	▲6710	7.50/20D	7.50/20	Ford	8-3⅛x3¾	239	6.4	176	100-3500	3-2½x4.71	N	Ford	4	Timken	S	H	** -6.67	Own M5	M	503	....	a	F	106¼	7½x3x¼	C
44	.....MH440-6	.....	182	....	34000	▲10600	9.00/20	10.00/20	Her WXLC3	6-4¼x4¾	404	5.4	239	118-2800	7-2½x13¼	Y	Fu 5A430	5	Tim SFD154	2B‡	H	** -8.43	Tim F2090W	Ws..A	870	....	C	F	96	9½x3x¼	T
45	.....MH-555-6	.....	260	260	42000	▲14900	11.00/20	11.00/20	Her RXC	6-4⅝x5½	529	6.3	390	131-2200	7-3x13¼	Y	Fu 5A620	5	Tim SD3000	2B	H	** -8.15	Tim F3100W	Ws..A	1092	1608	...	F	93	10⅛x3x⅛	T
46	Oshkosh....W703	.....	Opt	Opt	45000	16950	11.00/20D	12.00/20	Her RXLD	6-4⅜x5¼	558	5.4	405	141-2200	7-3½x13¼	Y	Fu 5A650	12	Tim SD454W	2F	H	** -6.31	Own-Tim	L6IH	1080	1625	G	TX	Opt	10¼-3½-⅝	B
47	(D)...W1600BD	.....	245	Opt	60000	22770	11.00/24D	12.00/24	Bu 6DC844	6-5¼x6½	844	...	600	180-1800	7-3¾x17	Y	Fu 4BI86	12	Tim SD462	2F	H	** -6.14	Own-Tim	LT6IA	1080	1625	G	TX	160	12⅜-3⅞-⅝	B
48	/D)‡W1600BDH	.....	267	Opt	60000	24300‡	11.00/24D	12.00/24	Bu 6DC844	6-5¼x6½	844	...	600	180-1800	7-3¾x17	Y	Fu 4BI86	12	Tim SD462	2F	H	** -9.82	Own-Tim	LT6IA	1080	1625	G	TX	174	12⅜-3⅞-⅝	B
49	(D)‡W1602BDH	.....	272	Opt	95000	29300	14.00/24D	14.00/24	Bu 6DC844	6-5¼x6½	844	...	600	180-1800	7-3¾x17	Y	Fu 4BI86	12	Tim SD472	2F	H	** -13.9	Own-Tim	LT6IA	....	2217	G	TX	177	12⅜-3⅞-⅝	B
50	.....W1600BG	.....	245	Opt	60000	22770	11.00/24D	12.00/24	Bu MO893	6-5⅝x6	893	...	625	200-1800	7-3¾x17	Y	Fu 4BI86	12	Tim SD462	2F	H	** -9.82	Own-Tim	LT6IA	1080	1625	G	TX	160	12⅜-3⅞-⅝	B
51	(D)...W1600CD	.....	259	Opt	60000	23400‡	11.00/24D	12.00/24	Cum 6HBI	6-4⅞x6	672	...	500	150-1800	7-4½x16	Y	Fu 4BI86	12	Tim SD462	2F	H	** -6.14	Own-Tim	LT6IA	1080	1625	G	TX	174	12⅜-3⅞-⅝	B
52	(D)..W1600CDS	.....	259	Opt	60000	23700‡	11.00/24D	12.00/24	Cum 6HBIS	6-4⅞x6	672	...	635	200-1800	7-4½x16	Y	Fu 4BI86	12	Tim SD462	2F	H	** -9.82	Own-Tim	LT6IA	1080	1625	G	TX	174	12⅜-3⅞-⅝	B
53	(D)..‡W1600CDH	.....	265	Opt	60000	24000‡	11.00/24D	12.00/24	Cum 6HBI	6-4⅞x6	672	...	500	150-1800	7-4½x16	Y	Fu 4BI86	12	Tim SD462	2F	H	** -9.82	Own-Tim	LT6IA	1080	1625	G	TX	172	12⅜-3⅞-⅝	B
54	(D)..‡W1600CDSH	.....	267	Opt	60000	24300‡	11.00/24D	12.00/24	Cum 6HBIS	6-4⅞x6	672	...	635	200-1800	7-4½x16	Y	Fu 4BI86	12	Tim SD462	2F	H	** -6.14	Own-Tim	LT6IA	1080	1625	G	TX	174	12⅜-3⅞-⅝	B
55	Peterbilt(D)344DT	13564	189	Opt	43000	16250	10.00/20D	11.00/22	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Spl 7741	12	Tim SW3012W	WF	A	6.00- 8.5	T 36000W	Ws6IA	1212	1734	a	FD	106½	10⅜x3½x⅛	TL
56	(D).....345DT	14119	187	Opt	54000	17300	10.00/20D	11.00/22	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Spl 7741	12	Tim SW456W	WF	A	6.00-10.2	T 36000W	Ws6IA	1450	1626	a	FD	106½	10⅜x3½x⅛	TL
57	(D).....354DT	14360	187	Opt	56000	17450	10.00/20D	11.00/22	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Spl 7741	12	Tim SW456W	WF	A	6.00-10.2	T 27454W	Ws6IA	1450	1626	a	FD	106½	10⅜x3½x⅛	TL
58	(D).....355DT	14760	187	Opt	56000	17900	10.00/20D	11.00/22	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Spl 7741	12	Tim SD462W	2F	A	** -8.15	T 27454W	Ws6IA	1000	1626	a	FD	106½	10⅜x3½x⅛	TL
59	Reo.....25TL	.....	169	169	47000	▲12950	10.00/20	10.00/20	Con B6427	6-4¼x4¼	427	5.9	324	127-2700	7-2⅞x13½	Y	Cla 270V&■	15	T-SD-3000	2F	T	7.5	Tim 35000	Ws6IA	1020	1472	G	TD	108½	9½x3¼x⅝	CP
60	Sterling...HBS130	.....	164	183	32000	11000	8.25/20	10.00/20	Wau 6MZA	6-4¼x4¾	404	5.6	290	130-3000	7-2⅝x12½	Y	Fu 5A43	5	T-SBD1555DPH	SF	L	6.80-13.14	T-35011H	T6IHV	664	1134	A	TX	83	9x3¼x¼	A
61	.....HDS140	.....	164	183	36000	11800	9.00/20	10.00/20	Wau 6MZA	6-4¼x4¾	404	5.6	290	130-3000	7-2⅝x12½	Y	Fu 5A43	5	T-SD3010PA	2F	L	6.84-10.22	T-35011TW	Ws6IA	1074	1554	A	TX	83	9x3¼x¼	A

(Turn to Page 102, Please)

▲ Includes Cab. ♦ Auxiliary transmission, Spicer 8031. ‡—Chassis Weights on Duals Front, Center and Rear. §—Hydraulic Coupling. ▼ Auxiliary transmission Spicer 703F with 3 forward speeds.
■ 6031 Auxiliary Transmission ‡ With power take-off * Complete vehicle price at Toledo without Federal Tax † Timken T76—2 speed transfer case. ‡ Timken T77—2 speed transfer case
♦ Auxiliary transmission Spicer 8031. ° Three speed transmission—2 speed transfer case.

Presenting a

REVOLUTIONARY ADVANCEMENT*

in

WARNER ELECTRIC BRAKES

NEW 16½"x5", 16½"x6"**, 16½"x7" Sizes

NEW Two-Shoe Construction

NEW For More Effective Stopping Power!

These big, new, powerful Warner Electric Brakes — with their two-shoe hinge construction, incorporate the most modern and advanced brake engineering — and provide an entirely new concept of *effective stopping power.*

INSTANTANEOUS, POSITIVE ACTION As with all Warner Electric Brakes, positive-acting braking power is developed within the brake itself. Because the braking mechanism is *electrically controlled,* there is no time lag. Regardless of distances from cab to rear trailer wheels, any amount of stopping power is *instantly available.* Even with this remarkably fast action, the larger, wider, two-shoe brake operates with velvety smoothness never before achieved in brakes of any other type.

UNMATCHED ECONOMY The new Warner Electric Brakes are inexpensive to install. Use only as much current as a tail light. Require minimum servicing thus preventing costly delays and tie-ups of equipment.

CONTROLLED BRAKING POWER Driver can pre-set "Vari-Load" dial on dash to meet load and road conditions.

SYNCHRONIZED OPERATION WITH EITHER AIR OR HYDRAULIC SYSTEMS Warner Controller synchronizes hydraulic, vacuum or air brakes on tractor with Electric Brakes on trailer. Regular tractor foot pedal then operates both systems *together.*

ASSURED DEPENDABILITY The new two-shoe Warner Electric Brakes assure years of dependable operation. Warner Electric Brakes have been performance-proved by leading tractor-trailer operators during many years of efficient, trouble-free service.

GREATER SAFETY When both the tractor and trailer are equipped with Warner Electric Brakes their *instantaneous* "stopping power" under *absolute control* assures greater safety. All brakes "come in" at the same instant, but with varying *amounts* of power. Therefore, rear trailer wheels get the *effect* of coming in first — and the tendency to skid or jackknife is prevented, thus giving greater protection to the driver and load — and avoiding costly repairs or tie-up of equipment.

For maximum performance and satisfaction, standardize on Warner Electric Brakes. Write for illustrated literature explaining all their many advantages.

WARNER ELECTRIC BRAKE MFG. CO.
BELOIT, WISCONSIN
Specialists in the manufacture of Electric Brakes since 1927

WARNER ELECTRIC BRAKES

SINCE 1927

***REVOLUTIONARY ADVANCEMENT**

More rugged construction, rigid shoes, longer lining life, smoother control and dependable performance under severe conditions.

No other brakes equal the new Warner Electric Brakes for simplicity of design and construction. Full clearance under tractor and trailer — nothing to get knocked off, leak, chatter or freeze. No exposed braking equipment — no rods to rattle — no tubes to split — no troublesome boosters and hose connections. One rugged all-purpose Electrical Cable Connection provides contacts for brakes, running lights, parking lights, stop and turn signals — ALL electrical contacts. As easy to plug in as a radio.

***Available September 1*

(Continued from Page 100)

Line Number	MAKE AND MODEL	Chassis List Price	WHEELBASE Minimum Standard	WHEELBASE Maximum	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES Standard Front and Rear	TIRE SIZES Maximum Authorized Tire Size (Duals un-less noted)	TIRE SIZES D-dual rear S-single rear	ENGINE DETAILS Make and Model	ENGINE DETAILS No. of Cylinders, Bore and Stroke	ENGINE DETAILS Displacement	ENGINE DETAILS Comp. Ratio	ENGINE DETAILS Torque lb. ft.	ENGINE DETAILS Max. Brake H.P. at R.P.M. Given	ENGINE DETAILS Number, Diameter and Length Main Bearings	Governor Standard	TRANSMISSION Make and Model	TRANSMISSION Forward Sp'ds	REAR AXLE Make and Model	REAR AXLE Gear and Type	REAR AXLE Drive X Torque	REAR AXLE Gear Ratio Range in High	FRONT AXLE Make and Model	BRAKES SERVICE Make Location Type Operat'n	BRAKES SERVICE Lining Area	BRAKES SERVICE Drum Area	BRAKES SERVICE Drum Material	BRAKES Hand Location Type	C.A Dimensions (Min. Std. W. B.)	FRAME Side Rail Dimensions	FRAME Type
	Sterling Cont'd																															
1	....HW8160		164	183	42000	12800	10.00/20	11.00/22		Wau 6SRKR	6-4½x5½	5175	5.96	125-2250	7-3½x3¼		Yu 5A62	5	T-8W3010PA	WF	L5.40–8.50	T-36000TW	W61A	1062	1574	A	TX	83	9x3½x¾	CT	f
2	....HW8235		182	193	52000	15700	11.00/20	11.00/24		Wau 145GK	6-5½x6	779	6.2	385-2100	7-3½x17⅛		Yu 4B86	4	T-8W456P	WF	L5.67–8.20	T-27454W	W61A	1308	1872	A	TX	92	9x3½x¾	CT	f
3	....HW8160H		182	193	42000	14250	10.00/20	11.00/23		Cum HB600	6-4½x6	672	17	500-1800	7-4½x16½		Yu 4B86	4	T-8W456P	WF	L4.71–6.17	T-36000TW	W61A	1062	1574	A	TX	92	9x3½x¾	CT	f
(D)	....HW8235H		182	193	52000	16000	11.00/20	11.00/24		Cum HB600	6-4½x6	672	17	500-1800	7-4½x16½		Yu 4B86	4	T-8W3012PA	WF	L5.66–8.20	T-27454W	W61A	1308	1872	A	TX	92	9x3½x¾	CT	f
(D)	....HW8235H		182	193	52000	16000	11.00/20	11.00/24		Wau 145GK	6-5½x6	779	6.2	385-2100	7-3½x17⅛		Yu 4B86	4	T-8W456P	CD	R6.04–7.31	T-36000TW	W61A	1062	1732	A	JX	92	9x3½x¾	AL	
	....HC8195		170	189	48000	15300	10.00/20	11.00/22		Wau 145GK	6-5½x6	779	6.2	385-2100	7-3½x17⅛		Yu 4B86	4	T-8W456P	CD	R6.21–13.16	T-27454W	W61A	1280	1872	A	JX	92	9x3½x¾	AL	
	....HC8265		182	193	60000	17750	11.00/20	11.00/24		Wau 145GK	6-5½x6	779	6.2	385-2100	7-3½x17⅛		Yu 4B86	4	T-8W456P	CD	R6.21–13.16	T-27454W	W61A	1280	1872	A	JX	91	12x3½x¾	AL	
	....HC8297		182	193	70000	20750	12.00/24	13.00/24	▲	Wau 145GK	6-5½x6	779	6.2	385-2100	7-3½x17⅛		Yu 4B86	4	T-8W456P	CD	R6.21–13.16	T-27454W	W61A	1280	1872	A	JX	92	9x3½x¾	AL	
	....HC8330		174	187	80000	21650	12.00/24	11.00/22	●	Cum HB600	6-4½x6	672	17	500-1800	7-4½x16½		Yu 4B86	4	T-8W456P	CD	R6.04–7.31	T-27454W	W61A	1060	1732	A	JX	92	9x3½x¾	AL	
(D)	....HC8195H		182	193	60000	18100	11.00/20	12.00/24		Cum HBD600	6-4½x6	672	17	500-1800	7-4½x16½		Yu 4B86	4	T-8W456P	CD	R6.21–13.16	T-27454W	W61A	1280	1872	A	JX	92	9x3½x¾	AL	
(D)	....HC8265H		182	193	70000	21050	12.00/24	13.00/24	▲	Cum HBD600	6-4½x6	672	17	500-1800	7-4½x16½		Yu 4B86	4	T-8W456P	CD	R6.21–13.16	T-27454W	W61A	1280	1872	A	JX	91	12x3½x¾	AL	
(D)	....HC8330H		174	187	80000	23450	12.00/24	14.00/24	▲	Cum HBD600	6-4½x6	672	17	500-1800	7-4½x16½		Yu 4B86	4	T-8W456P	CD	R9.21–13.16	T-27454W	W61A	1280	1872	A	JX	91	12x3½x¾	AL	
	Trucksteel																															
(C)	....F2X26 2F		156	237	26000	▲5900	7.50/20	8.25/20		Ford	9-3⅛x3¾	2289	6.4	180-3800	3-3¼x4.71	N	Ford	4	Eat 1350	SF	...	5.83–8.11	Ford	F61HV	502	836	c	TX	82½	7½x3x.47	CT	f
(C)	....F2X27-0 2F		156	237	27000	▲6450	7.50/20	9.25/20		Ford	9-3⅛x3¾	2289	6.4	180-3800	3-3¼x4.71	N	Ford BL	12	Cla R1300	SF	...	5.67–6.83	Ford	F61HV	605	1043	a	TX	82½	7½x3x.47	CT	f
(C)	....F2X34 2F		150	237	34000	▲8235	7.50/20	10.00/20		Ford	9-3⅛x3¾	2289	6.4	180-3800	3-3¼x4.71	N	Ford and BL	12	Cla R1300	SF	...	5.67–6.83	Ford	F61HV	605	1043	a	TX	82½	7½x3x.47	CT	f
(C)	....F2X34-0		135	224	34000	▲8235	7.50/20	10.00/20		Ford	9-3⅛x3¾	2289	6.4	180-3800	3-3¼x4.71	N	Ford	8	Ford	SF	...	5.67–10.5	Ford	F61HV	502	836	c	TX	82½	7½x3x.47	CT	f
(C)	....F4X26 4R		144	210	26000	▲5300	7.50/20	8.25/20		Ford	9-3⅛x3¾	2289	6.4	180-3800	3-3¼x4.71	N	Ford	8	Ford	SF	...	6.07–10.5	Ford	F61HV	502	836	c	TX	82½	7½x3x.47	CT	f
(C)	....F4X27–0		144	210	27000	▲7000	7.50/20	8.25/20		Ford	9-3⅛x3¾	2289	6.4	180-3800	3-3¼x4.71	N	Ford	8	Ford	SFd	...	7.47–12.9	Ford	F61HV	546	780	a	TX	82½	7½x3x.47	CT	f
(C)	....F4X29 4R		144	210	29000	▲7000	7.50/20	8.25/20		Ford	9-3⅛x3¾	2289	6.4	180-3800	3-3¼x4.71	N	Ford	16	Eat 1350	SFd	...	7.47–12.9	Ford	F61HV	546	780	a	2I	82½	7½x3x.47	CT	f
(C)	....F4X30–0		117	180	30000	▲7200	7.50/20	8.25/20		Chevrolet	6-3⅜x3¾	2356	6.192	93-3100	4-2¾x5½	N	Chevrolet	4	Chevrolet	SF	...	●● 6.17	Chevrolet	C61HV	546	780	a	2I	82½	7½x3x.47	CT	f
(C)	....C2X26 2F		157	234	26000	▲6800	7.50/20	8.25/20		Chevrolet	6-3⅜x3¾	2356	6.192	93-3100	4-2¾x5½	N	Cla R1300	8	Tim	SFd	...	5.67–6.83	Chevrolet	C61HV	546	780	a	2I	82½	7½x3x.47	CT	f
(C)	....C2X28 2F		157	234	28000	▲6800	7.50/20	8.25/20		Chevrolet	6-3⅜x3¾	2356	6.192	93-3100	4-2¾x5½	N	C and BL	12	Cla R1300	SF	...	5.67–6.83	Chevrolet	C61HV	615	1043	a	TD	82½	7½x3x.47	CT	f
(C)	....C2X34-0		131	224	34000	▲8235	7.50/20	10.00/20		Chevrolet	6-3⅜x3¾	2356	6.192	93-3100	4-2¾x5½	N	C and BL	12	Cla R1300	SF	...	5.67–6.83	Chevrolet	C61HV	546	780	a	2I	63¾	7½x3x.47	CT	f
(C)	....C2X34 2F		137	215	34000	▲8235	7.50/20	10.00/20		Chevrolet	6-3⅜x3¾	2356	6.192	93-3100	4-2¾x5½	N	Chevrolet	8	Ford	SF	...	6.07–10.5	Ford	C61HV	502	836	c	TX	63¾	7½x3x.47	CT	f
(C)	....C4X26 4R		117	182	26000	▲6120	7.50/20	8.25/20		Chevrolet	6-3⅜x3¾	2356	6.192	93-3100	4-2¾x5½	N	Chevrolet	8	Chevrolet	SF	...	6.41–11.1	Chevrolet	C61HV	546	780	a	2I	63¾	7½x3x.47	CT	f
(C)	....C4X29 4R		117	182	29000	▲6215	7.50/20	8.25/20		Chevrolet	6-3⅜x3¾	2356	6.192	93-3100	4-2¾x5½	N	Chevrolet	8	Chevrolet	SFd	...	7.47–12.9	Chevrolet	C61HV	512	836	a	TD	63	7½x3x.47	CT	f
(C)	....C4X27-0 4R		145	212	27000	▲8880	7.50/20	8.25/20		Chevrolet	6-3⅜x3¾	2356	6.192	93-3100	4-2¾x5½	N	Chevrolet	16	Eat 1350	SFd	...	7.47–12.9	Chevrolet	C61HV	512	836	a	TD	63	7½x3x.47	CT	f
(C)	....C4X30-0		117	184	30000	▲7290	7.50/20	8.25/20		Chevrolet	6-3⅜x3¾	2356	6.192	93-3100	4-2¾x5½	N	Chevrolet	16	Eat 1350	SFd	...	7.47–12.9	Chevrolet	C61HV	512	836	a	TD	63	7½x3x.47	CT	f

▲ Includes cab. ● Rear only; Front 11.00/24. ♦ Auxiliary transmission, Spicer 8031. ▲ Rear only; Front 12.00/24.

WGB

CLAROFICATION

IS MAXIMUM ECONOMY

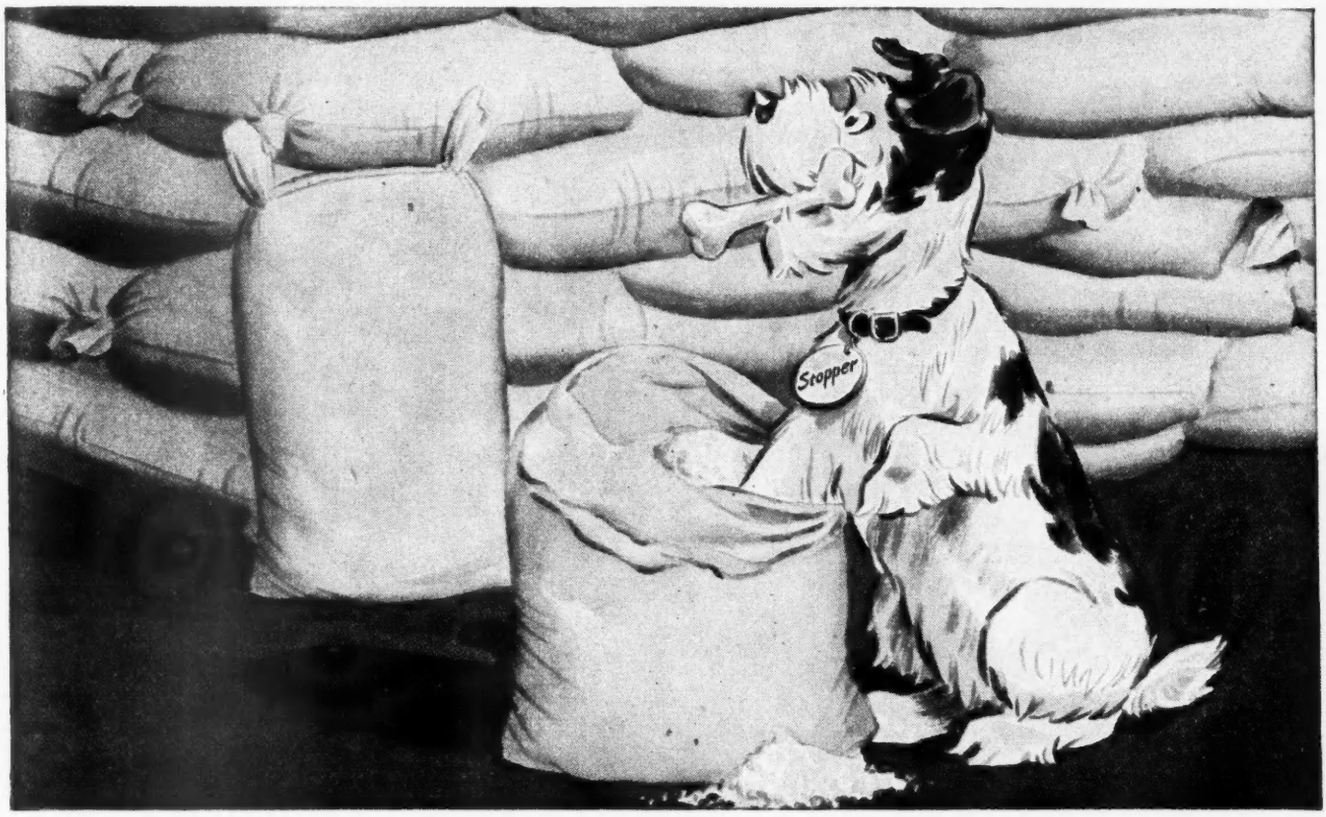
MR. FLEET OPERATOR: When you received your Autocar, Brockway, Buda, Diamond T, General Motors or Mack motor equipped with a WGB ClarOfier, you obtained the best filtration that money can buy—provided you use genuine WGB Cartridges, which are covered by patents preventing duplication. But if you use substitutes, which are prevented from using the WGB principle, you cannot expect WGB economy or motor protection.

The results which induced these manufacturers to equip their fine motors with WGB Oil ClarOfiers were obtained by use of the complete unit. It is not WGB filtration unless genuine WGB Cartridges are used. Substitutes cost more, because they do less. Be fair to yourself, to your motor and to the WGB ClarOfier. Use genuine WGB Cartridges and you'll get the economy, efficiency and motor protection which the manufacturer intended you to have.

WGB

OIL CLARIFIER, INC.

KINGSTON, N. Y.



"You can't bury it here!" he yelled

I WAS HUNTING for a likely spot to bury an extra dog-biscuit. I managed to chew open a sack in the American Brakeblok material warehouse.

"Just right," I thought, digging in with both paws.

I would have gotten the biscuit covered but the fellow who checks stock saw me and yelled, "Hey, Stopper. You can't bury it here!"

"And why not?" I growled back.

"Because we don't want any dog-biscuit in our brake lining. That's why!"

And I had to admit he had me there.

He went on to say that making the best possible brake lining called for using only the finest and purest ingredients—gathered from all parts of the world.

When material is taken from the warehouse it's measured down to a fraction of an ounce and is analyzed in the American Brakeblok laboratory before going into production. From raw material to finished product, American Brakeblok checks and rechecks to assure you of a superior lining on every count.

You'll find customers quick to appreciate American Brakeblok quality—and quick to thank you for steering them to maximum stopping safety.

In a heavy duty operation, everyone from driver to the big boss has a good word for the long life, few adjustments and the ability of American Brakeblok to deliver top service *regardless* of operating conditions.

Next time, specify American Brakeblok Brake Lining yourself!

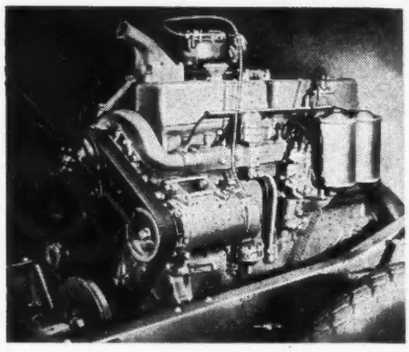
Distribution through 39 NAPA Warehouses

NAPA Symbol of Quality

American Brakeblok
BRAKE LINING

AMERICAN Brake Shoe COMPANY
AMERICAN BRAKEBLOK DIVISION
DETROIT 9, MICHIGAN

Newest IHC-Continental Engine Develops 246 hp. @ 2600 r.p.m.



ALTHOUGH the International-Continental model S-6749 engine has been offered for some time as standard equipment on International Harvester Co.'s "Western" or "W" truck models, full details have just been released. It is a six-cylinder, valve-in-head engine developing 246 hp. @ 2600 r.p.m. and has a displacement of 749 cu. in. The basic design stems from considerable experience gained during the war, accenting clean-cut appearance with simplicity of servicing.

The cylinder block is a one-piece casting integral with the crankcase, the latter being heavily ribbed to prevent distortion and reduce vibration. Cylinder bores are machined to take dry liners, an alloy cast iron properly normalized being used both for the block and liners. Liners have an exceptionally high hardness—444 to 555 Brinell for long life.

Cylinder heads are of dual, overhead valve design, held in place by 28 heat treated cap screws to prevent distortion of bores and valve seats as well as assurance against cylinder gasket failures. The combustion chamber is of improved design with provision to adapt the compression ratio to changes in octane rating of standard gasolines.

The heavy-duty counterbalanced crankshaft is of seven-bearing type with Tocco hardened journals. It is given a suitable heat treatment, Magnaflux-inspected, and statically and dynamically balanced to ½ in. oz. Hardness of journals is held 500 to 600 Brinell. Smoothness and increased life is afforded by the torsional vibration damper of bonded rubber-metal.

The camshaft is a one-piece drop forging with oil pump and distributor shaft drive gears integral, with five bearings of steel-back, babbitt-lined, replaceable precision type. Main and rod bearings are Tri-metal heavy duty replaceable precision type. Piston pin bushings are of phosphor-bronze. Flywheels are made of special alloy cast iron and x-rayed to detect flaws that might cause damage. They are balanced dynamically within ½ in. oz.

CONDENSED SPECIFICATIONS

Bore (in.)	**5⅜**
Stroke (in.)	**5½**
Displacement (cu. in.)	**748.8**
Compression Ratio	**6 to 1**
Maximum Hp. @ 2600 r.p.m.	**246**
Maximum torque @ 1250 r.p.m.	**576**
Crankcase capacity (qt.)	**18**

Individual Porting

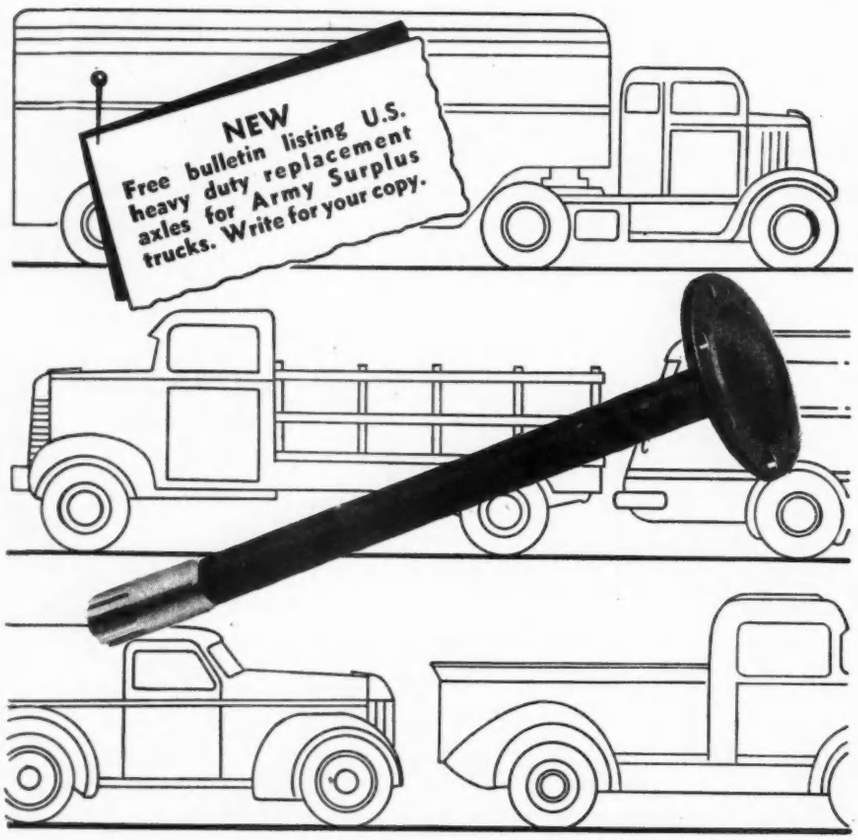
THE INTAKE manifold is down-draft type with individual porting, includes a suitable hot-spot to ensure satisfactory warm-up. The exhaust manifold is of three-section design with a center down-take outlet. The two end sections are joined to the center with slip joints to prevent cracking of end branches.

Pistons are cam-ground aluminum alloy castings with five rings—two oil rings and three taper faced compression rings. They are both oval and taper ground and have a solid skirt. The piston pin floats both in the rod and piston and is held in place with two spring steel retainers fitting in grooves in the piston.

Intake valves are of No. 1 Silchrome, of

(TURN TO PAGE 106, PLEASE)

TOUGH U.S. AXLES HELP THE WHEELS OF INDUSTRY TURN MORE PROFITABLY...



BUILT FOR TOUGH JOBS . . There are tough U.S. Axles to meet the requirements of nearly every type automotive vehicle on the highways today. Each is built right to do its job correctly—and save time and dollars by reducing breakdowns. Specify tough U.S. Axles.

•

At your Jobbers'.

•

US AXLES

THE U. S. AXLE COMPANY, INC. • POTTSTOWN, PA.

When it comes to VALVES
Count on Allied

for Accuracy
for Life
for Performance

● The advanced bi-metal construction of Allied Exhaust Valves assures your customers of performance and life unexcelled by any valve, at any price. The Austenitic Stainless Steel head is remarkably resistant to corrosion . . . has an extraordinary ability to hold its strength and shape under high heat. The nickel-chromium stem is outstanding in its resistance to wear.

In their accuracy of manufacture, Allied Valves are typical of all Allied Motor Parts. Coming from plants whose manufacturing capacity and production facilities are unsurpassed in this industry, Allied Parts can always be relied upon to equal or exceed in quality the parts they replace . . . Your Allied Jobber is headquarters for fine motor parts.

ALLIED MOTOR PARTS COMPANY, Detroit 1, Michigan

When the Motor is Down Build it Up with—

Pistons • Piston Pins • Piston Pin Set Screws • Piston Pin Lock Rings
Valves • Valve Keys • Valve Guides • Valve Springs
Expansion Plugs • Cylinder Sleeves • Cylinder Sleeve Assemblies
Water Pumps • Water Pump Parts and Packing

Allied Motor Parts are quickly available from NAPA Jobbers everywhere. Master stocks maintained in 39 NAPA Warehouses

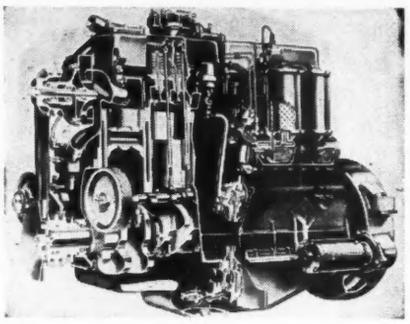
Allied MOTOR PARTS

NAPA Assurance of Quality

IHC-Continental Engine

(CONTINUED FROM PAGE 104)

large diameter, with a 30-deg. seat angle. The intake valve seat is machined in the head since the valves run fairly cool owing to the washing effect of the incoming charge of fuel. Exhaust valves, on the other hand, are of TPA steel, sodium-cooled, with a Stellite face. In addition the heads are Brite-Ray treated to prevent lead pitting. Exhaust valves are fitted with the Roto-Valve mechanism which acts to positively rotate the valve each time it lifts.



Stellite-faced exhaust valve seats also are provided. Dual valve springs, inner and outer are used.

Crankcase ventilation is of positive type using the Donaldson system, consisting of suction through a two-step valve feeding into the intake manifold. Inlet to the breather is protected by an air cleaner with a gauze type filtering element continuously steeped in oil fumes.

Lubrication is of full pressure feed through drilled passages in the block and crankcase to all bearings as well as to timing gears and rocker arms. Oil is supplied from a large capacity submerged gear type oilpump, the intake being protected by a large Float-O screen. An integral oil cooler of tube type, designed for easy cleaning, is installed in series with the drilled oil passages. A dual military type oil filter, base-mounted to eleminate plumbing, is standard.

The cooling system, which is automatically controlled by two thermostats in conjunction with a by-pass, contains a leak-proof centrifugal water pump with a carbon seal, driven by twin V-belt from a pulley on the crankshaft. The pump shaft is mounted on two, large, widely separated ball bearings. By means of an inlet header about half of the coolest water in the system is first directed against the exhaust valve seats while the remainder goes through the oil cooler and then to the water jackets.

This engine is designed for a three-point mounting with a large trunnion mount at the front end.

Standard accessory equipment includes: a Holley mechanical governor; a Holley carburetor; AC fuel pump; Delco-Remy starter, generator, and distributor; 12-cu. ft. capacity Bendix-Westinghouse air compressor.

REACH YOUR JOBS EASIER

with CURTIS AUTO LIFTS

2 Types • • • 3 Platform Styles

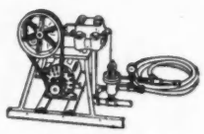
COMPLETE ACCESSIBILITY — Every lubrication point easily reached.

SAFETY — Built-in control assures safe lowering speed at all times.

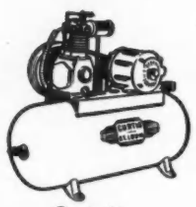
TWO TYPES — Full hydraulic oil locked with separate oil tank or self-contained piston reservoir type.

THREE PLATFORM STYLES — Free-wheel type without wheel guides; free-wheel type with automatic drop-away guides; roll-on type with open run-ways.

Write for Literature Kit C-6 for complete information on Automatic Air Compressors • Self-Oiling Car Washers Engineered Auto Lifts



Curtis Hydraulic Car Washer



Curtis Air Compressor

93 Years of Precision Manufacturing

D-546

CURTIS PNEUMATIC MACHINERY DIVISION
of Curtis Manufacturing Company
1970 Kienlen Avenue • St. Louis 20, Missouri

CURTIS PNEUMATIC MACHINERY DIVISION *of Curtis Manufacturing Company* D-546-A
1970 Kienlen Avenue, St. Louis 20, Missouri

Please send me your Literature Kit C-6, which includes bulletins on Curtis Air Compressors, Curtis Auto Lifts and Curtis Car Washers.

Name.....
Firm.....
Street.....
City..... Zone..... State.....

318,000 Driver Licenses Suspended or Revoked

For drunken and reckless driving, failure to comply with safety responsibility laws and other law violations, 318,000 motorists lost their privilege to drive last year, according to a survey just completed by the American Association of Motor Vehicle Administrators.

This is the first time that nation-wide totals have been made public on driver license suspensions and revocations.

The survey shows that the period of license suspension ranges from three days up to life. The average for the country last year was 45 days.

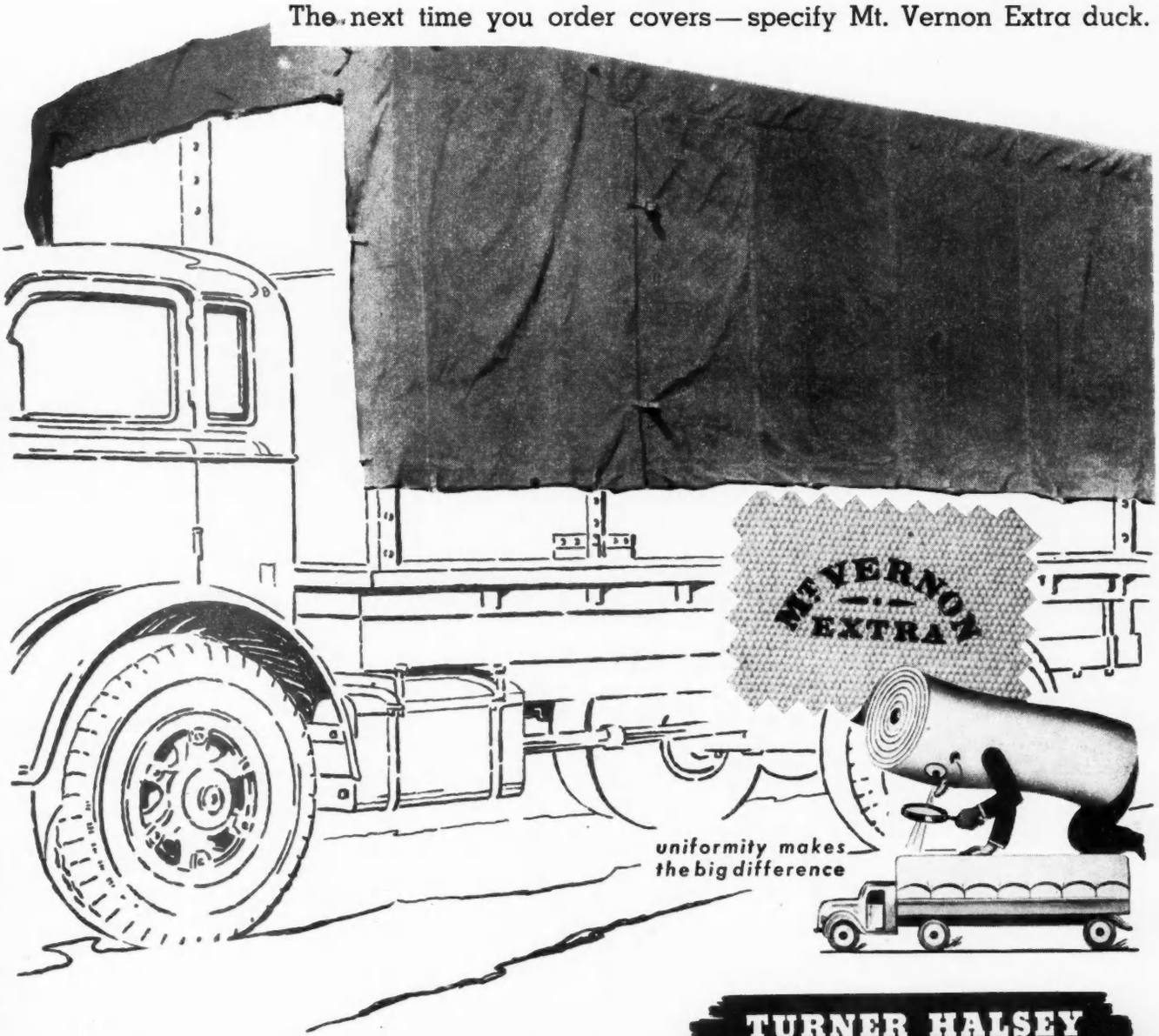
Nearly a fourth of the total resulted from license suspensions which new safety responsibility laws require where drivers involved in accidents fail to show proof of financial responsibility.

Of the remainder, by far the most frequent cause for suspension reported was drunken driving. In a typical state, for example, 3532 licenses were suspended or revoked, of which 1585 grew out of convictions of drunken driving. There were 146 charged to hit-and-run convictions; 272 for reckless driving, 11 in cases of involntary manslaughter and 1619 from miscellaneous violations, including mandatory suspensions arising from the safety responsibility law.

Pays Out in Longer Wear

With greater resistance to rough handling and a weather-fighting stamina that assures safe cargo protection, covers made with Mt. Vernon Extra duck are serving the country's largest fleet owners.

Made from choice grades of cotton, spun and woven to a high degree of uniformity, Mt. Vernon Extra duck provides extra quality in covers that pay out in longer wear with better cargo protection. The next time you order covers—specify Mt. Vernon Extra duck.



Mt. Vernon-Woodberry Mills

TURNER HALSEY
COMPANY
Selling Agents
40 WORTH ST. • NEW YORK

Branch Offices: CHICAGO • ATLANTA • BALTIMORE • BOSTON • LOS ANGELES • AKRON

Engine Deposits

(CONTINUED FROM PAGE 69)

type is also effective provided frequent element changes are employed.

Variations in crankcase ventilation affect distribution of deposits. Considering pan and cover deposits alone, it appeared that no ventilation or a small amount in the reverse direction tended to increase them over those obtained with standard tests.

Most engines as designed and installed in service vehicles do not lend themselves readily to extensive changes in crankcase ventilation. Therefore, any alteration in the normal arrangement should be undertaken with great caution and only as a last resort. Every effort should be made to keep the normal ventilation system clean, in operable condition, and as warm as possible to alleviate stoppage due to freezing.

There is no substitute for genuine Bendix Drive Parts

Relining brakes with cardboard would probably be pretty profitable for the individual job, but your customers would be streaming in the door the next morning to find out what kind of a "gyp joint" they had gotten into. The net results of using other than genuine service parts may not be so instantly apparent, but the eventual result is usually the same.

It is just plain common sense not to gamble with your customers' satisfaction in order to save a few pennies. That kind of economy only costs you more in the long run.

When you service Bendix* Drives, make sure that you use only Genuine Bendix Parts—the parts that you know are as accurately made for dependable service as the original Bendix Drive. Your distributor has Genuine Bendix Parts—make sure you specify "Bendix" the next time you order parts.

*REG. U. S. PAT. OFF.

"Look for the blue and white box"

Bendix Drive

ECLIPSE MACHINE DIVISION of ELMIRA, NEW YORK

Bendix AVIATION CORPORATION

Gas & Oil Deposits

by W. J. BACKOFF

Research and Development Lab. The Pure Oil Co.

THE development of automotive fuels and lubricants for engine service generally is based on extensive investigations in the laboratory. This practice, while responsible for greatly improved quality in petroleum products, does not necessarily predict the performance that may be encountered in actual service.

The limitations of laboratory work in solving the engine varnish and sludge problem became apparent to us in 1938 and 1939. In order to provide the badly needed service data, and to obtain information which could not readily be determined in the laboratory controlled field tests were undertaken. The objectives of this study were:

1. To determine if there was a valid engine deposit problem in gasoline fleet operation.
2. To determine the degree of correction existing between the laboratory and highway operation.
3. To obtain extensive field service data to enable a more useful and practical interpretation of existing laboratory tests.
4. To isolate and identify certain major variables, other than motor oil, which might have significant effect on engine deposits.
5. To provide final field evaluation for new petroleum products under the same conditions as used by the customer.

(TURN TO PAGE 111, PLEASE)

WHO IS IT?

SUN OIL COMPANY'S 37-YEAR OLD PRESIDENT IS AN ACTIVE LEADER IN BOY SCOUT AFFAIRS. HE IS...

- ☐ ROBERT G. DUNLOP
- ☐ J. HOWARD PEW
- ☐ EUGENE J. HOUDRY
- ☐ FRANK S. REITZEL

Answer on Page 111

Engine Deposits

(CONTINUED FROM PAGE 108)

Test Findings

FAULTY mechanical conditions, which prevent normal elimination of moisture which is continually finding its way into the crankcase, were found to cause greater and more rapid build-up of deposits than can be attributed to most oil-fuel combinations tested. It was noted that good oil and gasoline results can be masked by water deposits. Under such maintenance conditions, all efforts to improve cleanliness by oil and fuel means are virtually wasted. In order to take full advantage of the improvements and refinements being made in petroleum products, maintenance must assure at least normal moisture elimination from the engine at all times.

It was found that heavy engine deposits can be formed in overload, highway operation in less than one month's time as the result of: failed thermostat; blocked or restricted crankcase breather pipe; leaking cylinder head gasket, cracked cylinder head or cracked block.

The need for gasoline control in test work is clearly demonstrated. Lack of control of fuel was responsible for the observed variation in deposit results. However, it is not the intention of this paper to infer that gasoline is necessarily a critical commercial problem of broad scope, but rather that it is one of many factors which in certain instances does contribute to the formation of engine varnish and sludge deposits.

It was observed that gasolines which contribute to engine deposits, tend to suppress or mask bearing corrosion caused by the oil. As these deposits increase, the bearing weight losses decrease, probably due to varnish forming a protective coating on the bearing surface which tends to prevent corrosion and also appears to reduce wear. In this connection, the need for freedom from deposit formation applies to the motor oil as well as the gasoline.

Difference in oils can have an appreciable effect in suppressing or minimizing "fuel-formed" deposits. Furthermore, this "fuel-deposit" handling ability was not necessarily related to the detergent properties of the oil A.P.I. classification. These data are regarded as showing that motor oils affect cleanliness in two ways: by the ability of the oil to resist oxidation and deterioration which controls the amount of "oil-formed" deposits; by the ability of the oil to handle "fuel-formed" deposits, and minimize the amount that is allowed to accumulate on the engine parts.

Because some gasolines produce more sludge and varnish than others, and because some oils are more effective than others in overcoming the sludge and varnish produced by the gasoline, it is impossible to predict from the A.P.I. classification alone

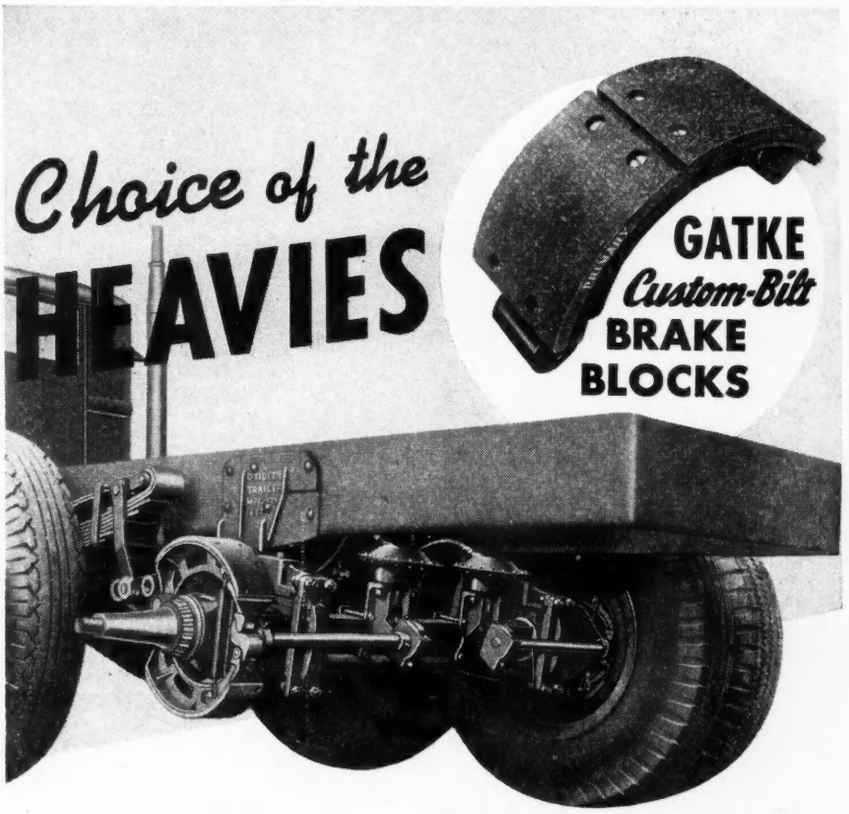
(TURN TO PAGE 114, PLEASE)

● WHO IS IT?

ANSWED . . . (To Question on P. 108)

Robert G. Dunlop, boyish-looking, Christian-living former accountant, is now president of Sun Oil Co. He is also a director of the Valley Forge Council of Boy Scouts.

(Another Cartoon Quiz is on P. 114)



Greater Safety and Reduced Maintenance Costs

Better results—safer, more economical operation — That's why Fleets large and small from coast to coast are standardizing on GATKE *CUSTOM-BILT* Brake Blocks.

GATKE Brake Blocks give *smooth, non-grabbing action* with reduced wear and tear on brakes and tires. They have *tremendous holding power* for emergency stops—uniformly maintained at all service temperatures—no loss of holding power on long grades or under prolonged service.

They give *longer* service life, *reduce* maintenance costs and *keep equipment fit for the road* with less time out for adjustments.

Make this TEST. Use GATKE *CUSTOM-BILT* Brake Blocks for your next five relines and compare results.

Ask your GATKE Jobber or write.

Gatke CUSTOM-BILT BRAKE LININGS

BLOCKS SETS ROLLS SHEETS

GATKE CORPORATION

228 N. La Salle St., Chicago 1, Ill.

THIS SIGN . . .

means *specialized* service to truckers

The Pennsylvania dealers listed on the opposite page are specially trained to render outstanding truck tire service through the Penn-Craft Mileage Extension Plan.

When you take advantage of this plan, through any one of these dealers, you are assuring yourself of the lowest cost per mile in truck tire operating. For this plan encompasses all phases of inspection, rotation, repair, recapping . . . the proper size tire for each operation and the proper rim requirements.

Call on these dealers regularly or enroute.

Pennsylvania dealers are equipped to render fast, competent and complete road service.

Inspection and repair is done by truck tire experts specially trained to do the best job, with the best materials.

Battery service and new Pennsylvania batteries are available from this selected list of dealers.

over these dealers

Pennsylvania Dealers West of the Mississippi River

Albert Lea, Minn., John Berglund Garage
Albuquerque, New Mex., Earnhart & Leonard
Anoka, Minn., Main Motor Sales
Ardmore, Okla., C. F. Adams & Son
Arkadelphia, Ark., Aubrey Blevins Sales Co.
Athens, Tex., Scott-Crawford Tire Co.
Austin, Minn., Brown's Tire Service
Austin, Minn., Park Motor Co.

Bakersfield, Calif., Oildale Tire & Rubber Co.
Bemidji, Minn., Northern Auto Supply
Billings, Mont., Custom Tire Co.
Bismarck, N. D., Lomas Oil Co.
Bonham, Tex., Brown Tire Co.
Bozeman, Mont., Belshaw for Tires
Burlington, Iowa, Burlington Oil Co.

Caldwell, Idaho, Payne Auro Co.
Carthage, Mo., B & W Tire Co.
Carthage, Mo., Pioneer Oil Co.
Cedar Rapids, Iowa, Super Service Oil Co.
Cherokee, Iowa, Vetter Oil Co.
Cheyenne, Wyo., Kingham Tire & Oil Co.
Clarinda, Iowa, Fulks Tire Service
Clinton, Iowa, Macheal Oil Co.
Colton, Calif., Roller's Super Station

Dallas, Tex., Jack Bunn Tire Co.
Denison, Tex., Weaver Tire Co.
Denver, Colo., Luby Motor Co.
Dequeen, Ariz., Wolfe Tire & Battery Co.
Des Moines, Iowa, Master Tire Co.
Dubuque, Iowa, Rainbo Oil Co.

El Centro, Calif., C. A. Denton

Falls City, Neb., James Oil Co.
Fargo, N. D., Engh Tire Shop
Fayetteville, Ark., Fayetteville Tire Exchange
Fort Dodge, Iowa, Zakeer Auto & Home Supply Co.
Fort Scott, Kans., Triangle Tire Co.
Fort Worth, Tex., Louis Tire Shop
Fortsmith, Ark., Crane Tire & Battery
Fresno, Calif., Valley Truck & Tire Co.

Gainsville, Tex., Gainsville Tire Shop
Gardena, Calif., S & F Service
Gering, Neb., Masek Auto Supply
Gilroy, Calif., Gilroy Rubber Works
Glendale, Calif., Psenner & Pauff, Inc.
Grand Forks, N. D., La Salle Tire Co.
Grand Island, Neb., Cates Recap Co.
Grand Junction, Col., Forbush Co.
Grand Rapids, Minn., Acheson Tire Service
Granite Falls, Minn., Master Tire Co.
Greenville, Tex., Garland Trotter Service
Guymon, Okla., Allen Tire Shop

Herington, Kans., Clark Oil Co.
Hobbs, New Mex., Earnhart & Leonard
Holdenville, Okla., Taylor-Kemmerer Co.
Hope, Ark., Fox Tire Co.
Hutchinson, Kans., Wayne Stewart Tire & Supply
Idaho Falls, Idaho, Log Cabin Service
Independence, Kans., Ashcraft Tire Co.
Iola, Kans., Oliver Tire Service

Jacksonville, Tex., Barrington Tire Shop
Jefferson, Tex., Brown Tire Co.

Kansas City, Mo., Grand Tire Co.
Kansas City, Mo., Jack Witherspoon Tire Co.
Kirksville, Mo., Preston Tire Shop

Lamar, Col., Allen & DeLoach
Las Cruces, New Mex., Dona-Ana Tire Co.
Las Vegas, Nev., George Knipp
Lemoore, Calif., Friend's Service
Le Sueur, Minn., Beutz Motors
Liberal, Kans., Allen Tire Shop
Lincoln, Neb., Hompes Tire Co.
Little Falls, Minn., Sweeney-Lindquist Oil Co.
Long Beach, Calif., Sudduth & Co.
Longview, Tex., Robinson-Hayward Tire Service
Los Angeles, Calif., Brodie Brothers
Los Angeles, Calif., Dawson Tire & Rubber Co.

Mandan, N. D., Art's East End Phillips
Marysville, Calif., Chas. Merz Tire Co.
Mena, Ark., Murray Johnson Service Station
Midland, Tex., Ever-Ready Auto Service
Minneapolis, Minn., Duncan Tire Service
Minneapolis, Minn., Northwestern Tire Co.
Minneapolis, Minn., Palmer's Garage
Minneapolis, Minn., Theis Brothers
Minot, N. D., Standard Products Co.
Montrose, Calif., Truss Sales Co.
Mt. Pleasant, Tex., Brown Tire Co.

Nacogdoches, Tex., O. F. Baxter Tire Store
New Orleans, La., Rupp Tire Service
North Kansas City, Mo., Allen Bros. Inc.
Norwalk, Calif., Jack Thomas Tire Co.

Odessa, Tex., Wallace Adams
Oklahoma City, Okla., Frederickson Tire Co.
Omaha, Neb., Neal Tire Store
O'Neill, Nebraska, Hunt Recapping Service
Osseo, Minn., Osseo Motor Co.
Ottawa, Kans., Gibson Tire & Battery Service

Paris, Tex., Main Tire Store
Pasadena, Calif., Webster Tire Service
Phoenix, Ariz., Case & Jordan
Portland, Ore., Peck Bros.
Prescott, Ariz., Prescott Tire Co.
Provo, Utah, McCoard Oil Co.

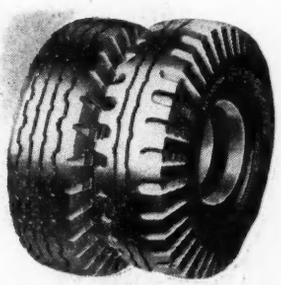
Raton, New Mex., Adams Garage
Red Wing, Minn., Johnson's Tire Shop
Rogers, Ark., Rogers Tire Service

Sacramento, Calif., Sadler Bros.
Salina, Kans., Dealers Tire Service
Salinas, Calif., Lamar Bros.
Salt Lake City, Utah, Penn Tire Service
San Antonio, Tex., W. F. Littleton
San Diego, Calif., Bart Morris & Son
San Francisco, Calif., Fry & Ramonda
San Jose, Calif., Bean Tire & Rubber Works
Santa Barbara, Calif., B & M Service
Santa Barbara, Calif., El Servidor Station
Sauk Center, Minn., Otto Brothers
Shenandoah, Iowa, Adams Tire Co.
Sheridan, Wyo., Alomo Court & Service Station
Shreveport, La., Waldrip Tire Service
Silver City, New Mex., Parrish Tire Store
Sioux City, Iowa, Inter State Oil Co.
Sioux Falls, S. D., Sioux Tire & Battery Co.
South St. Paul, Minn., Truckers Terminal
Springfield, Mo., H. L. Hinds
Staples, Minn., Dennehey Tire Service
St. Joseph, Mo., Michel Tire & Battery Co.
St. Cloud, Minn., Otto Brothers
St. Paul, Minn., Oskey Brothers

Taft, Calif., Reliable Tire Shop
Texarkana, Tex., Fox Tire Co.
Trenton, Mo., Helman Dollar Oil Co.
Tucson, Ariz., Harbour Tire & Auto Supply
Tulsa, Okla., Motor Exchange Tire Co.
Twin Falls, Idaho, Dee L. Pace Sales Co.
Tyler, Tex., Clark's Super Service

Valley City, N. D., Cliff Olson Service
Vernon, Tex., Robert L. More Tire & Garage Co.
Virginia, Minn., Hanson Tire Shop

Waterloo, Iowa, W. W. Warsaw
Wayzata, Minn., Jackson Service
Wellsburg, Iowa, Marathon Products Co.
Wichita, Kans., Holleicke Tire Co.
Winona, Minn., Kalmes Tire Service



PENNSYLVANIA

PENNSYLVANIA RUBBER CO. • PENN-CRAFT PARK • JEANNETTE, PA.

49 years of successful business through successful dealers

Engine Deposits

(CONTINUED FROM PAGE 111)

whether or not clean or dirty engines will result from actual service.

Under certain conditions, the lighter viscosity grades or an oil will allow the formation of more engine varnish and sludge than the heavier types. Such performance is generally attributed to the difference in oxidation stability between the SAE viscosity grades of an oil.

Difference in engine deposit performance between viscosity grades occurred only when fuel deposits were encountered. The data are more satisfactorily explained by considering low viscosity oils to have inferior handling ability for "gasoline-formed" deposits. In a practical way this indicates that varnish and sludge from the fuel may be reduced to some extent by the use of heavier oil where permissible.

Reduction of drain period is shown to be one of the most effective means for minimizing varnish and sludge deposits.

The engine design factor was observed to have as much effect on certain deposits as major variations in oil or gasoline.

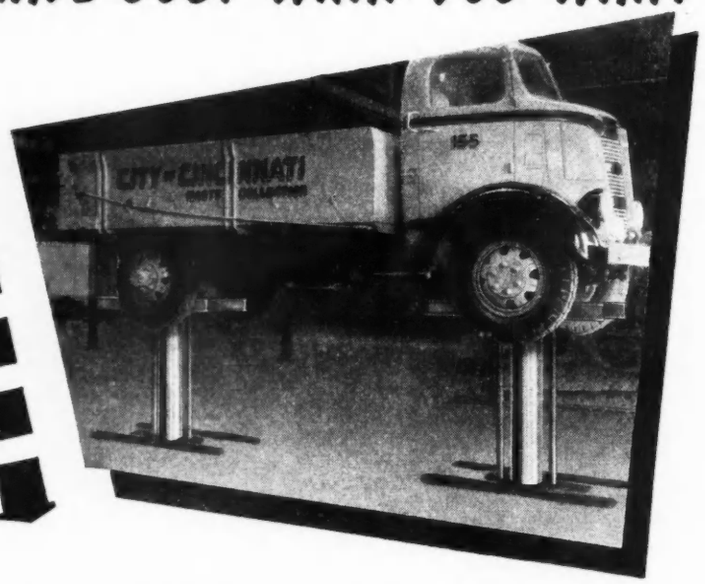
Engine size also appeared to affect deposit severity. When large displacement engines were used in the field tests, they were abandoned after a time because of the low level of severity and sensitivity. Good deposit severity was obtained with engines of 230 cu. in. displacement, while the use of an engine of about 275 cu. in. materially reduced deposit formation. With an engine of over 400 cu. in. displacement, virtually no deposits could be obtained with any oil-fuel combination.

by **A. C. PILGER, JR.**
Eng. in Charge of Automotive Field Research Tide Water Associated Oil Co.

In recent years it has become increasingly apparent to automotive and petroleum technologists that certain fuel characteristics were important factors in influencing engine varnish and sludge deposits. A Fuels Composition Panel of the Engine and Sludge Group, The Pure Oil Co., was established with the assignment of formulating a comprehensive series of analytical test methods for evaluating variations in fuel compositions and to develop the possibilities of selecting

(TURN TO PAGE 116, PLEASE)

JOYCE LIFTS...
HAVE JUST WHAT YOU WANT



You can get exactly the type of Lift you need for every fleet maintenance job in the Joyce line of new, modern Hydraulic Lifts.

√ There are nine models of heavy duty 2-Post Lifts with split superstructure or continuous rails. For buses and trucks. Capacities up to 20 tons.

√ The amazing new Shopmaster 2-Post Lift with cradle support on front piston; short rail on rear piston. Capacity 4 tons, for cars and light trucks up to 167" wheelbase.

All Joyce Lifts are full hydraulic; air or electrically operated. Flush type installations offer clear, safe floor conditions at all times. Installation greatly simplified . . . no piston to move. They cost you less and give you more in time-saving, long-lasting, trouble-free service.

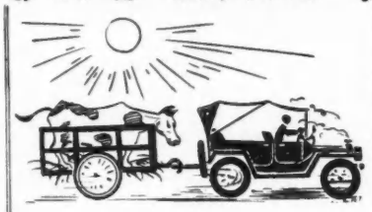
Let our Lift specialist give you complete details, or write for Catalog 303-L.

IN CANADA: MIDLAND FOUNDRY & MACHINE CO. LTD., MIDLAND, ONT.

● SINGLE-POST AUTO LIFTS ● LIFTMASTER HYDRAULIC JACKS
● SHOPMASTER 2-POST LIFT ● "FREE WHEELER" LUBE JACKS
● BUS & TRUCK 2-POST LIFTS ● HOLD-A-CAR CHASSIS STANDS

THE JOYCE-CRIDLAND CO. • DAYTON 3, OHIO

HOW IT STARTED!

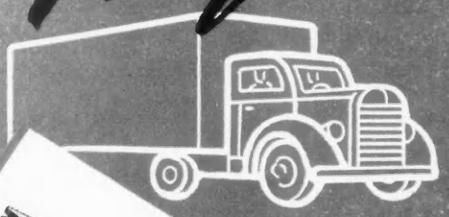


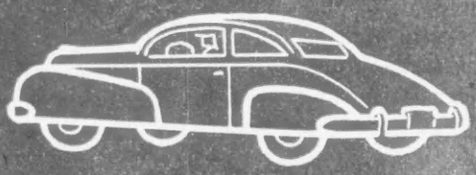
THE FIRST TRAILER MADE BY THIS CONVERTED WAGON WORKS IN EDGERTON, WISC. WAS A TWO-WHEEL AFFAIR FOR HAULING A COW. THE COMPANY WAS...

☐ KINGHAM TRAILER CO.
☐ HIGHWAY TRAILER CO.
☐ THE TRAILMOBILE CO.
☐ GRAMM TRAILER CO.

Answer on Page 116

Preferred BOTH WAYS!





...as ORIGINAL EQUIPMENT

...as REPLACEMENT PARTS

The same superior quality and performance that make PERMITE Parts preferred for original equipment on world-famous trucks, cars and buses, make them also top choice replacement parts among fleet operators everywhere.

Keeping maintenance costs at a minimum under today's peak operations is no easy task. It requires the finest in replacement parts . . . parts you can rely upon to give dependable, long-life, trouble-free service no matter how "rugged" the going.

Correctly designed, precision engineered PERMITE Replacement Parts are made to do just that . . . and they're doing it every day, everywhere. They're made **best** to serve you **best.**

Don't take chances with inferior parts. Take, instead, bigger net profits through consistently lower maintenance costs – with performance-proved PERMITE Parts. There's a PERMITE Distributor near you.

ALUMINUM INDUSTRIES, Inc.

CINCINNATI 25, OHIO

PERMITE

REPLACEMENT PARTS

PISTONS	VALVE GUIDES	WATER PUMPS	CYLINDER SLEEVES AND ASSEMBLIES	TIE-ROD ENDS	MUFFLERS AND CLAMPS
PISTON PINS	VALVE STEM KEYS	WATER PUMP REPAIR KITS	SPRING SHACKLES	BOLT SETS	TAIL PIPES
VALVES	VALVE SPRINGS			BUSHINGS	

Engine Deposits

(CONTINUED FROM PAGE 114)

test methods that might distinguish satisfactory from unsatisfactory fuels as judged by their engine varnish and sludge forming tendencies.

The conclusions of the Analysis Panel of the Group were:

1. Different fuels exhibit markedly different tendencies to cause varnish and sludge in engines operated in field service.

2. So many of the fuel inspection data show correlation with engine deposition as to make it impossible to select any one property or combination of properties as being of special significance.

On the basis of the work concluded, the Analysis Panel recommended the following:

1. Procurement of high and low quality reference fuels for use in engine standardization be expedited.

2. There is urgent need for field data obtained under a wide range of operating conditions on all types of equipment. The universal nature of this problem makes it certain that cooperative action, augmenting private investigation, will result in more rapid progress than will otherwise be possible.

END

(Please resume your reading on P. 70)

GENUINE
P&D
IGNITION PARTS
it's not the park
...but the PLAYER that COUNTS!
And it's not the outside but what's inside the P&D ignition products that makes for greater satisfaction in service.
P&D's one complete quality line of starting, lighting and ignition replacement parts and coils is your best bet for electrical or tune-up jobs because P&D concentrates all of its efforts, fine materials and experienced technicians to making this only P&D line the finest you can carry.
Handling the P&D one complete line simplifies ordering, minimizes inventory problems.
MARKS OF QUALITY IN P&D VOLTAGE REGULATORS
• Each part fabricated from material best suited to do its duty.
• Each part precision-made to assure complete performance satisfaction with ample reserve to meet all service conditions.
• Constructed and designed to instantly and correctly match generator output to battery requirements under all temperature and field service conditions.
• Rugged, precision construction makes for sensitive response and trouble-free performance.
• Sealed factory adjustment with temperature compensation assures immediate accurate and satisfactory operation when installed as directed.
P&D
MANUFACTURING COMPANY, INC.
LONG ISLAND CITY 5, NEW YORK
STARTING • LIGHTING • IGNITION • REPLACEMENT PARTS
P&D MANUFACTURES ONLY ONE COMPLETE QUALITY LINE. ONLY THE FINEST MATERIALS AND WORKMANSHIP OBTAINABLE ARE EMPLOYED

Spark Plugs

(CONTINUED FROM PAGE 38)

These possibilities should therefore be considered before changing to a plug of a colder heat range. The operating temperature varies from cylinder to cylinder and such effects may be expected to be more pronounced in certain cylinders. Cylinder to cylinder variation in temperature in an eight cylinder automotive engine operated at road load is shown in Fig. 1.

Low Speed Fouling

MISSING or roughness at low speed is usually indicated, on a plug, by black carbon fouling, Fig. 2. The carbon fouling is the fact. That the carbon fouling caused the noted missing is the conjecture. If the conjecture is correct, the remedy is (1) to go to a hotter plug, or (2) to eliminate the source of carbon fouling either by reconditioning the engine, if due to high oil consumption, or by adjusting the carburetor, if too rich, or (3) to change the mode of operation to include sufficient high output runs to burn off any carbon accumulations before they become troublesome.

Fig. 3 is a photograph of the insulator shown in Fig. 2, after being subjected to engine operation at a slightly higher output than that under which it became fouled.

But if the conjecture is wrong, then the observed fouling is due to the noted missing, i.e. the engine intermittently fails to fire, allowing the plug to cool off and to collect gasoline and oil vapor which carbonizes

(TURN TO PAGE 118, PLEASE)

● HOW IT STARTED

ANSWER . . . (To Question on P. 114)

Highway Trailer Co.'s first trailer was a two-wheeler for hauling a cow. The vehicle was sold at the Jefferson County Fair in Oct., 1917.

(Another Cartoon Quiz is on P. 118)

That TACHOGRAPH is "My Buddy"

IT MAKES A COMPLETE DAILY RECORD OF MY RUN...

- WHEN ENGINE STARTED
- HOW LONG ENGINE IDLED
- WHEN VEHICLE STARTED
- HOW FAST IT TRAVELED
- WHEN VEHICLE STOPPED
- DISTANCE TRAVELED BETWEEN STOPS

That's what drivers all over are saying, because the Tachograph does verify their written reports on the movements of the vehicles they operate. Not only does it conserve their time but it proves their efficiency and gives them protection against false accusations regarding speeding, etc.

In addition, the Tachograph gives fleet operators a complete record so that costs can be accurately computed and high driver efficiency can be maintained, resulting in greater per-mile profits.

Thousands of Tachographs are now in use and have proved their economy. The installation is simple—all that is necessary is to remove the conventional speedometer now on the vehicle, mount the Tachograph on the dash, and attach to the speedometer cable. Manufactured by the Sangamo Electric Company and fully guaranteed.

CHART TELLS ALL

The Tachograph chart gives you a complete printed record of exactly what happens to every vehicle, day-in—day-out. All you do is place the chart in the instrument and lock the cover. The Tachograph makes the record and gives you a complete report. Every fleet owner and truck operator should have a copy of the 12-page Bulletin SU-3A. Coupon below is for your convenience. Mail it today for your free copy.

MAIL THIS COUPON

DISTRIBUTED EXCLUSIVELY BY

Wagner ELECTRIC CORPORATION

6476 PLYMOUTH AVE., ST. LOUIS 14, MO., U. S. A.

Wagner Electric Corporation

Please send a copy of Bulletin SU-3A.

Name and Position _____

Company _____

Address _____

City _____ State _____

We operate _____ (NUMBER) Vehicles

S47-4

Spark Plugs

(CONTINUED FROM PAGE 116)

and eventually shorts out the plug. In this case the heat range of the plug is not at fault, and the remedies just mentioned are not indicated. Instead we should investigate the ignition system to make sure that sufficient voltage to spark the plug gap is delivered to the plug. We should check the battery, condenser, and points. We should inspect the high tension cable and the distributor for leaks or breaks in the insulation.

We should check for places where the high tension current could bypass the plug either as a spark through a break in the insulator surface or as a spark from the terminal to some projection or boss on the cylinder head. We should check the plug gap. If it is too wide, the available high tension voltage may not be sufficient to fire it regularly. If it is too small, it may not always ignite the mixture when it does spark because of inherently bad mixture due to imperfect carburetion. Just as in the case of excessive temperature, we should expect cylinder to cylinder variation in the engine. This is illustrated in Fig. 4, which shows insulators from plugs operated in cylinders 1, 2, 3, and 4 of an engine operated at low output. The corresponding insulators, from plugs operated at slightly higher outputs are shown in Fig. 5.

Figs. 6, 7 and 8 show plugs of different heat ranges operated under identical engine conditions for three different cylinders of an eight-cylinder engine.

High Speed Fouling

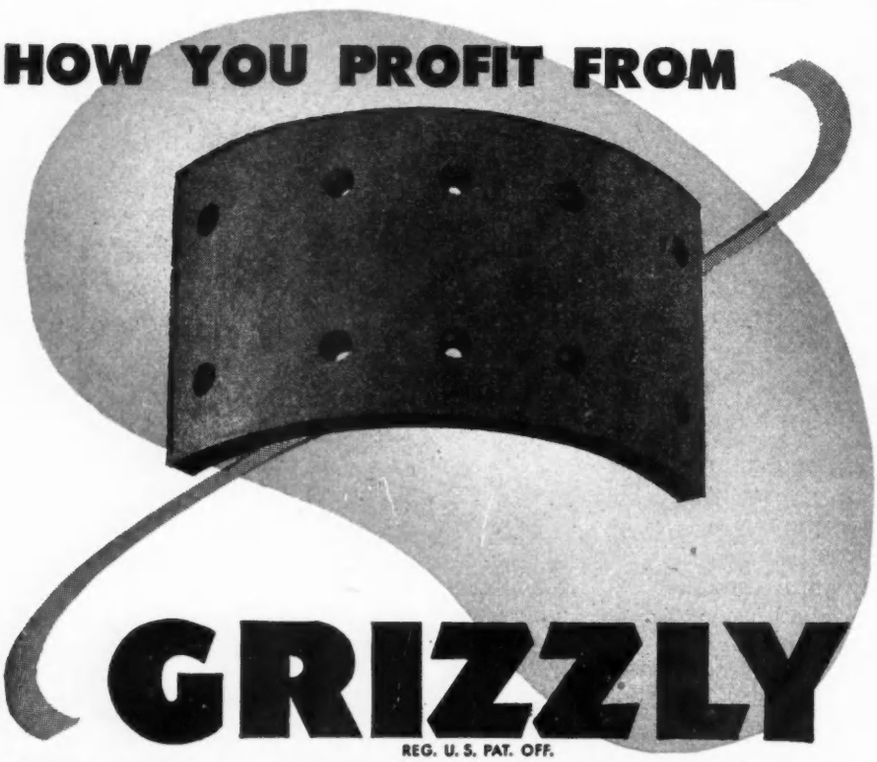
MISSING or roughness at high speed or on acceleration is usually an indication of the presence of a coating of lead oxide and other lead salts on the tip of the insulator. In Fig. 9 is shown a badly lead-fouled spark plug.

These compounds have little effect on the performance of a plug at the temperatures encountered in part throttle and low speed operation. At high speeds and loads, however, when the temperatures also are high, they form good electrical conductors which tend to short out the plug.

In normal operation the oxides condense as a loose powder on the cooler engine parts such as the roof of the combustion chamber, shell of the spark plug, and regions of the insulator. As the temperature is increased, the powder fuses, forming a

(TURN TO PAGE 120, PLEASE)

HOW YOU PROFIT FROM



GRIZZLY

REG. U. S. PAT. OFF.

BRAKE LINING EXPERIENCE

Grizzly has produced fine quality brake lining for over 30 years, and the experience gained through these years pays rich dividends to Grizzly users.

Experience, in both automotive and industrial fields, has enabled Grizzly to solve brake lining problems of widely divergent natures. Grizzly experience has been of utmost value in Grizzly research and study of new brake lining developments, and this same experience has helped establish Grizzly as one of the largest, most dependable producers of molded brake lining.

Do as other fleet operators have long been doing—take your brake lining problems to Grizzly. Get full advantage of Grizzly's many years of brake lining experience. Grizzly Manufacturing Company, Paulding, Ohio.

There's a Grizzly Distributor near you—call him today!

"Bear in Mind" . . . ask for

GRIZZLY

REG. U. S. PAT. OFF.

BRAKE LINING

GASOLINE TAXES COLLECTED BY THE STATES LAST YEAR AMOUNTED TO MORE THAN...

- ☐ $ 100,000.00
- ☐ $ 1,000,000.00
- ☐ $ 100,000,000.00
- ☐ $ 1,000,000,000.00

Answer on Page 120

GENEROUS WALL LUBRICATION *Always* UNDER CONTROL

That's why STEEL-VENTS work . . . and give much longer efficient life . . . in any job

★ More cylinder wall lubrication is an absolute necessity—in any old engine—rebored, resleeved or badly tapered.

Why? Because when an engine needs a ring replacement, the water jackets are coated with lime and scale. This insulation retards heat flow to the cooling water . . . cylinder bores are hotter and more distorted than in a new engine.

The logical answer is more cylinder wall lubrication, but *always under control.*

Because of their phenomenal oil-carrying ability, Steel-Vents easily provide this added lubrication. They deliver a generous amount of oil to the walls—*all the way up.* That's one reason why they give much longer efficient life in any ring replacement job. Then too, Steel-Vents never clog up. They keep on functioning at top efficiency, long after other types of rings are clogged or worn out.

Millions of Steel-Vent installations have proved that *generous wall lubrication always under control* insures a long, efficient life. That's why you should use Steel-Vents in *every* ring replacement job—rebored, resleeved or badly tapered.

HASTINGS MANUFACTURING COMPANY • HASTINGS, MICHIGAN

Hastings Ltd., Toronto

HASTINGS

STEEL-VENT PISTON RINGS

Generous Wall Lubrication
Always Under Control

Spark Plugs

(CONTINUED FROM PAGE 118)

continuous glaze which reacts with silica, if it is present in the insulator, to form a low melting point lead silicate glass. The deleterious effect of the lead silicate glaze is due to its high electrical conductivity at high temperatures which, like the lead salts and oxides, tends to promote ignition miss. Such glazes, once formed, are difficult to remove except by mechanical abrasion in the spark plug cleaner. The lower melting point lead salts such as lead oxychloride and lead oxybromide can often be burned off in the engine by slowly increasing the load, at all times remaining below the missing point, until the plug is free of miss at all loads.

The process may be better illustrated by an example. In a certain car all the plugs were so badly fouled that it was not possible to run above 50 miles per hour. At this speed (and temperature) the resistance of the coating was measured and found to be below 50,000 ohms. At 40 m.p.h. no miss was noted. The plugs were accordingly run at 40 m.p.h. The speed was then slowly increased; if the rate of increase was too rapid and miss occurred, the speed was dropped back slightly. In this way the car speed was gradually brought up until it could be operated at top speed without miss. The resistance, after the test, was over 20 megohms, and the plugs were free of deposit. This is an extreme and is mentioned here merely to indicate the nature of high speed miss.

Spark Plug Serviceability

IN CHECKING the plugs which have been removed from an engine, the question of the useful life of a plug often arises. Although it is reasonable to expect about 10,000 miles of service or 260 hours of operation, a precise figure cannot be given since the life is governed by the operating conditions and by the service expected. Plugs with electrodes which have been worn thin must be regapped at more frequent intervals than plugs with new electrodes, so that the economically useful life would be determined by the expense of servicing and the cost of the interruption in service caused by removing the plugs for service.

The cost in terms of wasted gasoline, of operating fouled plugs in an engine, is well known and even if the poorer response of an engine with chronic miss were unobjectionable, the extra gasoline consumption should not be tolerated.

Servicing Spark Plugs

THE ABRASIVE blasting technique represents the most satisfactory method of removing the coatings deposited on the insulator tips and shells. The operation of the cleaner is simple and, unless the compound blast is directed at the plug for an excessively long period of time, the plug is not injured in any way. The

(TURN TO PAGE 122, PLEASE)

TAKE THE DRAG OFF Your MOTORS
Are your trucks hauling only payload? Or are they wasting power on heavy loads of gum, varnish and sludge? Better drop those drags . . . they're dangerous! These stubborn enemies of motor efficiency can cause costly breakdowns as well as power loss. So prevent their formation and set your motors free with the famous additive MARVEL MYSTERY OIL.
Add MARVEL to crankcase oil and gasoline . . . it goes to work fast, cleaning rings, valves and feed lines. Motors leap into new life as gummy chains dissolve! And it will be a longer service life, too, with less down-time for repairs, because MARVEL strengthens all lubricants and guards against excessive wear. Even in sizzling upper cylinder zones, MARVEL spreads its tough protective film. For a fleet of motors free of gummy deadheads . . . remember MARVEL MYSTERY OIL when you think of oil and gas! It is backed by the one guarantee that means positive results . . . more than 20 years of sensational performance among America's big-time fleets. Emerol Manufacturing Co., Inc., 242 West 69th St., New York 23, N. Y.
MARVEL
MYSTERY OIL
CONTENTS ONE QUART
MARVEL MYSTERY OIL
FOR CYLINDER LUBRICATION
REINFORCED LUBRICATION
MARVEL HI-REV
RAPID-SAFE
MOTOR TUNE UP
QUICKLY DISSOLVE
GUM and SLUDGE
PENETRATING
MARVEL HI-REV — the rapid motor tune-up that swiftly dissolves gum and sludge. A shop standby for heavy duty de-sludging jobs.
The MARVEL INVERSE OILER — a compact, top cylinder, auxiliary lubrication system to meter Marvel Mystery Oil to critical upper cylinder parts according to engine needs.

● HOW MUCH?

ANSWER . . . ***(To Question on P. 118)***

Over a billion dollars. State gasoline taxes collected from highway users in 1946 amounted to $1,064,681,000.00.

(Another Cartoon Quiz is on P. 122)

When you're glad you have a Snap-on

Snap-on's Blue-Point Boxockets are stronger . . . safer . . . and require only half the space

Here is safe, powerful leverage that invites confident wrench speed. See how easily it slips into those hard-to-get-at places . . . engaging the nut on all six corners with an encircling "no-slip, no-spread" grip.

Snap-on Boxockets combine *speed* with *safety* on tough nut-turning operations . . . and because of their double broaching, they need only *half the turning space* required by an end wrench when handle movement is limited. Among the many advantages of Boxocket construction are the long, round-shaped handles with a comfortable, full size hand grip that give you powerful leverage; and the placing of the wrench heads at an offset from the handle to give clearance from obstructions.

The complete "double-offset" series contains a full range of sizes from 3/16" up to and including 3 1/8". Available through Snap-on's nationwide, direct-to-user tool service.

SNAP-ON TOOLS CORPORATION

8026-H 28th AVENUE, KENOSHA, WISCONSIN

International Division: Kenosha, Wisconsin, U. S. A.

Spark Plugs

(CONTINUED FROM PAGE 120)

abrasive compound is selected to have sharp cutting edges rather than the rounded ones associated with ordinary sand. Additionally the grain size distribution is controlled to give the optimum proportions of the various sizes of particles.

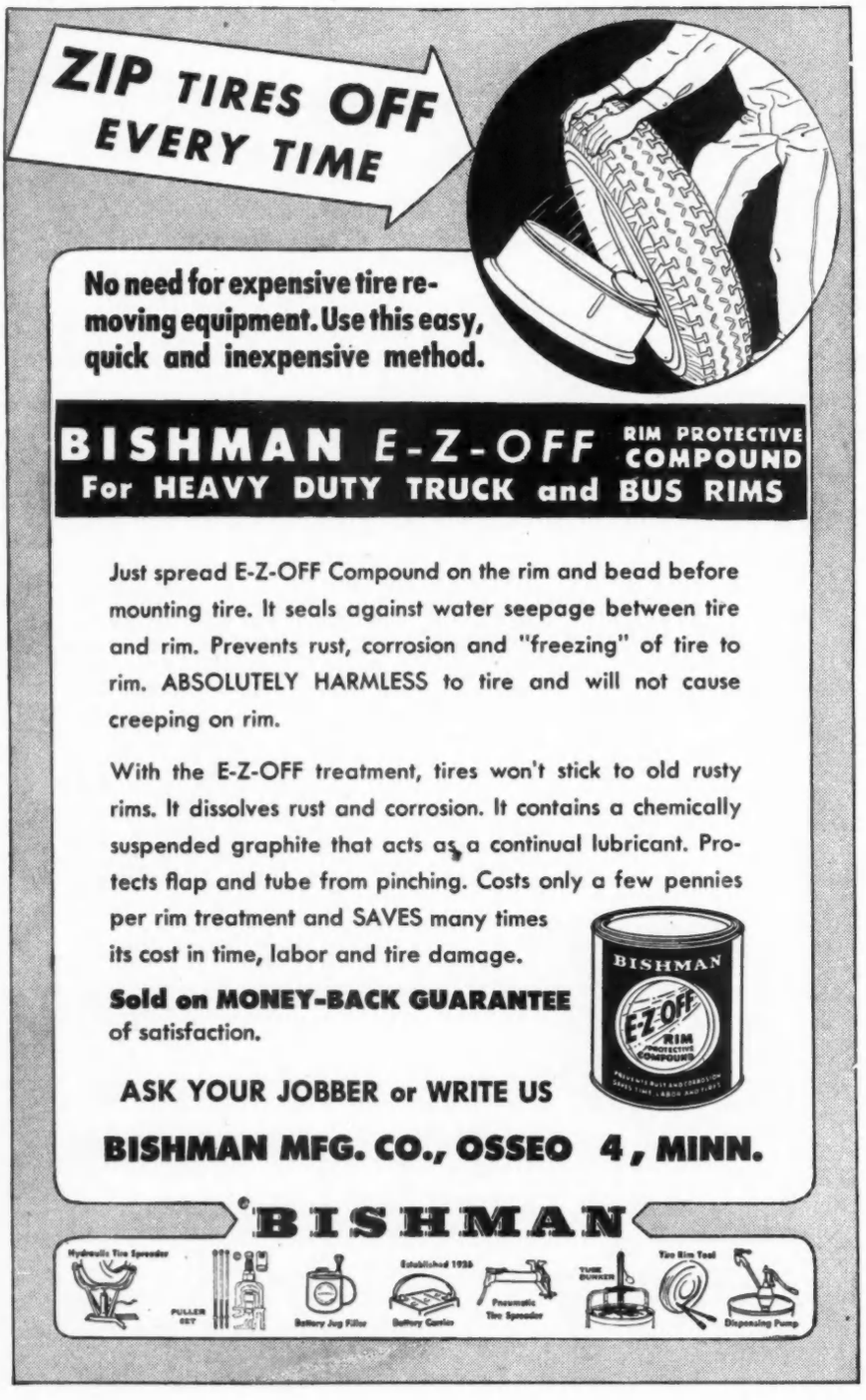
An important part of the reconditioning operation is the cleaning of the terminal end of the insulator and the electrodes. The former can usually be wiped clean with the aid of a little grease solvent, the latter can be cleaned with sandpaper.

Another item of the reconditioning is the gap setting which, because of irregularities of worn electrodes, should be checked with round wire feeler gages rather than with flat leaf type feelers.

Although methods of reconditioning spark plugs have been well developed, methods of bench testing plugs which are completely reliable have not been discovered. The difficulty lies in the inability to reproduce on a plug on the bench, the thermal conditions which prevail when the plug is operated in an engine. Because of this, certain defects, namely oxide coatings, which would cause malfunctioning in a hot engine have no deleterious effect in a cold compression box or similar tester. The difficulty in evaluating the effect of such coatings on a cold bench test makes it appear desirable to eliminate the coating by cleaning as determined by visual inspection.

END

(Please resume your reading on P. 40)

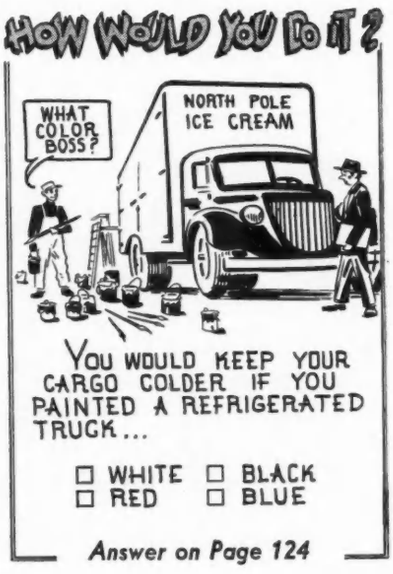

ZIP TIRES OFF EVERY TIME
No need for expensive tire removing equipment. Use this easy, quick and inexpensive method.
BISHMAN E-Z-OFF RIM PROTECTIVE COMPOUND
For HEAVY DUTY TRUCK and BUS RIMS
Just spread E-Z-OFF Compound on the rim and bead before mounting tire. It seals against water seepage between tire and rim. Prevents rust, corrosion and "freezing" of tire to rim. ABSOLUTELY HARMLESS to tire and will not cause creeping on rim.
With the E-Z-OFF treatment, tires won't stick to old rusty rims. It dissolves rust and corrosion. It contains a chemically suspended graphite that acts as a continual lubricant. Protects flap and tube from pinching. Costs only a few pennies per rim treatment and SAVES many times its cost in time, labor and tire damage.
Sold on MONEY-BACK GUARANTEE of satisfaction.
BISHMAN
E-Z-OFF
RIM PROTECTIVE COMPOUND
ASK YOUR JOBBER or WRITE US
BISHMAN MFG. CO., OSSEO 4, MINN.
BISHMAN

WELDING SPEEDS ASSEMBLY

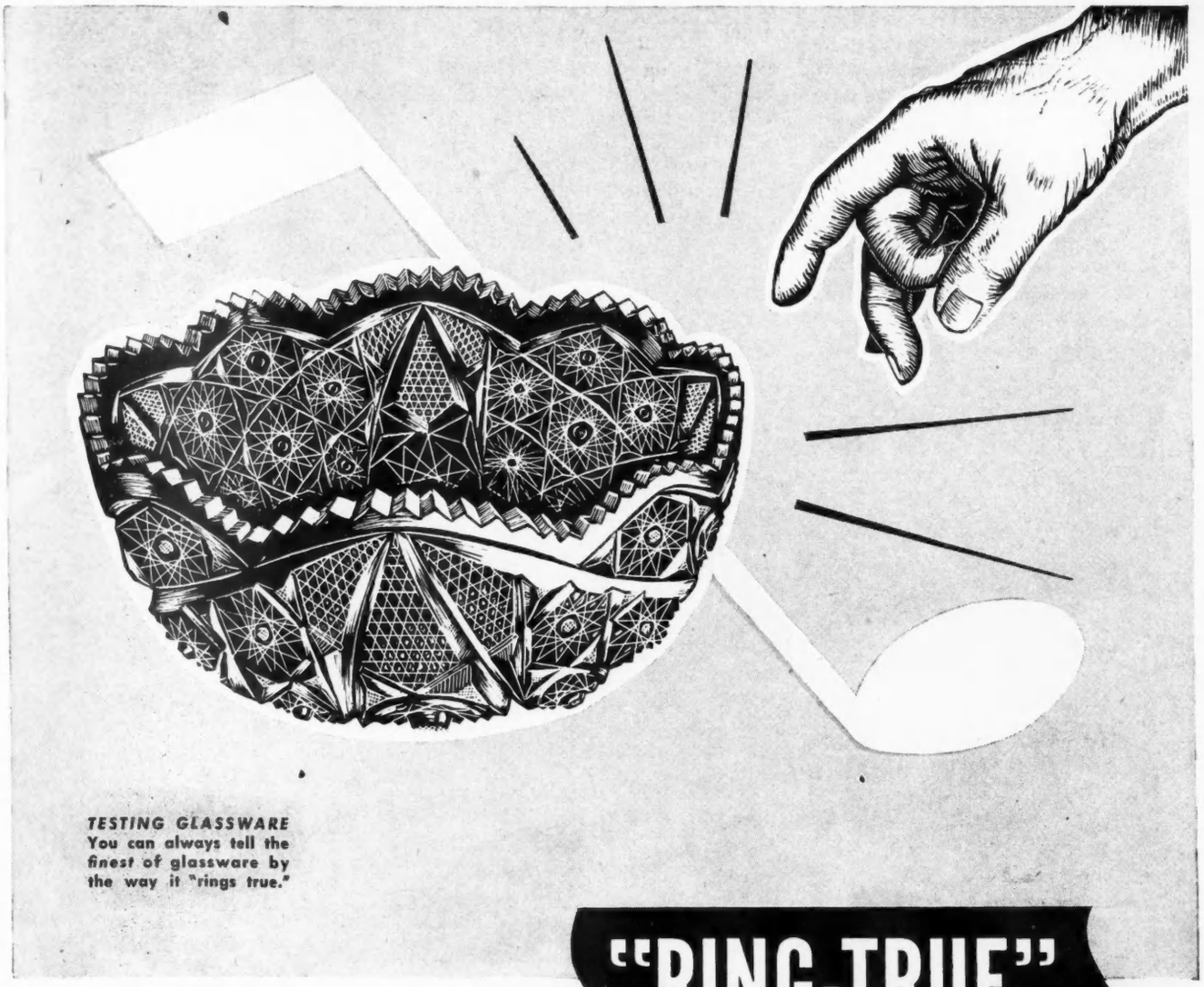
A new manufacturing process which not only increases the security of attachment of automobile or truck bodies and steering gear assemblies to chassis frames but also reduces manufacturing cost and chances of misalignment has been developed by Midland Steel Products Co.

The process consists of projection welding previously threaded nuts to frame side rails. The nuts have four projections formed on the attachment side of the head during the forging process. To attach a nut to the frame, it is placed, with projections "up," in the lower die of the platen of a 100 KVA Progressive Welder Co. press welder. The side rail is slid along, until a registering hole in the channel (see Fig. 4) drops over the shoulder on the nut. The upper platen is brought down, one shot of current is passed through the electrodes, fusing the projections to the side rail and the job is finished.

Advantages over the previous method of either arc welding or mechanically attaching such nuts are greater security of attachment, accurate alignment, and considerable increase in output, particularly since nuts do not have to be tapped or re-tapped after welding.


HOW WOULD YOU DO IT?
WHAT COLOR BOSS?
NORTH POLE ICE CREAM
YOU WOULD KEEP YOUR CARGO COLDER IF YOU PAINTED A REFRIGERATED TRUCK...
☐ WHITE ☐ BLACK
☐ RED ☐ BLUE

Answer on Page 124



TESTING GLASSWARE
You can always tell the *finest* of glassware by the way it "rings true."

"RING-TRUE"

IN AUTOMOTIVE PRODUCTS, TOO, "RING-TRUE" MEANS THE FINEST

Today you'll find the "Ring-True" emblem of Clawson & Bals on a fast-growing line that includes the *finest* automotive products: Engine Bearings . . . Reconditioned and Rebabbitted Connecting Rods . . . *Bohnalite* Pistons and Pins . . . Hydraulic Brake Parts . . . Hydraulic Brake Hose . . . Whip Ends . . . Water Pumps . . . Water Pump Repair Kits . . . Spring Shackles . . . Flexible Hose Assemblies for gas, oil, grease and vacuum lines . . . Shock Links . . . Babbitt Metal . . . Chevrolet Rod Dippers. If it's "Ring-True," it's the *finest!* Clawson & Bals, Inc., 2508 S. Michigan Avenue, Chicago 16.

Genuine RING-TRUE PRODUCTS

CLAWSON & BALS, INC.

Really Complete Engine Bearing and Connecting Rod Service . . . Branches in Principal Cities

Governor Round-Up

(CONTINUED FROM PAGE 48)

speed since this can be readily adjusted on the vehicle. Some operators ask the factory for a pre-set engine speed, and this can be done at the Hoof factory. However, if the operator wants pre-setting for a specific road speed, it is necessary to add information as to axle ratio, tire size, and road speed in miles per hour. Governor speed can be readily adjusted with the aid of a tachometer in the shop or on the road, or by road testing. Adjustment depends upon the type of governor. In the seal type the adjustment is locked by means of a two-piece snap seal or a lead seal. On the key type, adjustment can be made only with the key in the lock and cannot be changed without using the special key. Servicing by the operator is not recommended as Hoof prefers to have governors returned to the factory for overhaul and repairs.

On Monarch mechanical governors adjustment for speed is obtained by increasing or decreasing spring tension by means of an external screw. Monarch lists standard installation packages for most popular makes of motor trucks and engines. Where a standard package is not available in the velocity models, they require the engine make, number of cylinders, governed speed in rpm, piston displacement, name and size of carburetor. The model S vacuum governor is available for many popular makes of engines and is calibrated at the factory. The range of the Model R governor is not as wide as that of the Model S; hence it is supplied in a slow speed and a high speed model. Monarch also features its "Saf-T-Lok" model which has a remote control of adjustment at the instrument panel and is intended for commercial and passenger car installations where the speed range can be altered at will by the owner-driver.

Some manufacturers pre-set the governors to an intentionally low speed so as to prevent damage to an engine when it is first started under governor control. Consequently, most adjustments will be upward. However, in all cases it is desirable to warn the mechanic to handle the throttle carefully so as to prevent damage to an engine when testing without load, before an initial governor adjustment has been made.

END

(Please resume your reading on P. 49)

A WATCH WITH A KEY!!!

That's as Old-Fashioned as a Spark Plug with a Separate Gasket!

HUNTING A GASKET every time you change a spark plug is as out-dated as hunting a key to wind your watch. Edison's patented "SPUN-ON" Leakproof Gasket is just as much a part of an Edison Plug as the stem is part of a modern watch. You can't lose it. You never have to replace it. It's absolutely gas-tight. The "SPUN-ON" Gasket fits the engine block at all points because it's built into the plug. It assures more efficient cooling, increased power, complete use of gas.

The same engineering skill that developed the "SPUN-ON" Gasket is available to help you solve your spark-plug problems. Call on Edison-Splitdorf's *Transportation Service Department.* It won't cost you a cent or obligate you in any way.

THOMAS ALVA EDISON 1847 1947 CENTENNIAL

Edison
SPARK PLUGS
Edison-Splitdorf Corporation, West Orange, N. J.

PERFORMANCE AS GREAT AS THE NAME

TIRE PRICES SLASHED

A reduction in the list price of tires, ranging as high as 25 per cent, was announced on an industry-wide basis last month. The popular 6.00 x 16 passenger car size now lists for $14.40 in virtually all makes, compared with the previous $16.10.

APRIL LOADINGS DOWN 1.1%

April truck loadings decreased 1.1 per cent from the March figure but were 10.3 per cent over April a year ago, according to figures from American Trucking Associations, Inc.

● HOW WOULD YOU DO IT?

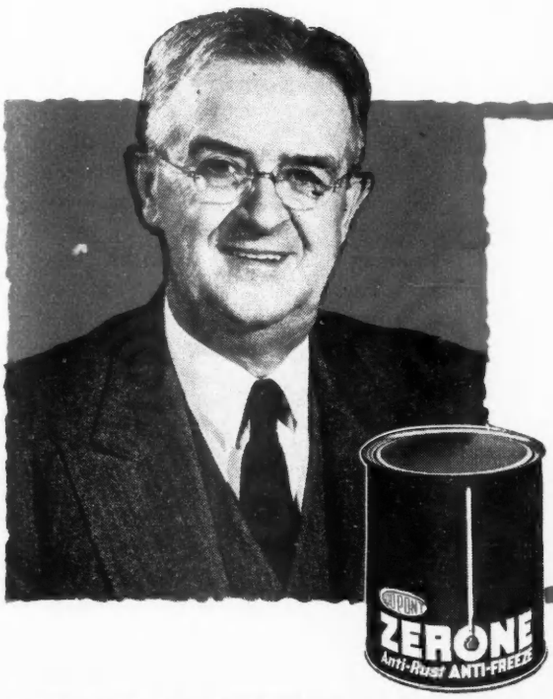
ANSWER . . . (To Question on P. 122)

Of the four colors named, white would be best. Better still would be the natural color of polished aluminum or stainless steel. Bright surfaces reflect heat rays that dull or dark surfaces would absorb.

(Another Cartoon Quiz is on P. 126)

Two fleet owners tell

—why one uses "Zerone" anti-freeze and the other "Zerex"

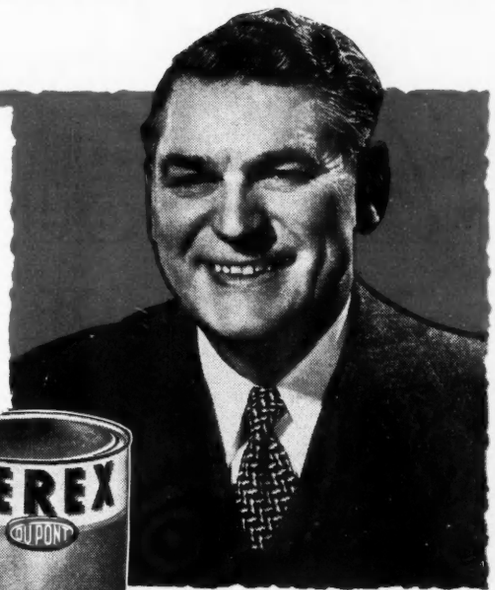


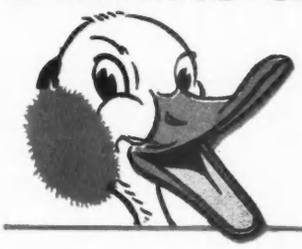
"Why do I use 'Zerone'? That's easy! Because it's tops for economy when used with normal opening thermostats (160° F. or below), on my light and medium duty vehicles."

"Zerone" is made from the most efficient of all known safe anti-freeze materials . . . needs only an occasional check-up. And its special inhibitor retards rust and corrosion—gives long-time anti-acid protection—and keeps a clean cooling system clean

"Fair enough! But let me tell you why I use 'Zerex.' You see, my engines are designed to operate in the 180° to 200° F. range. We require an anti-freeze solution that will withstand these high-operating temperatures and still protect against freezing at sub-zero temperatures when the trucks are not in use. 'Zerex' does both jobs—with ample margin!"

"Zerex" is non-evaporating—in a properly operating cooling system, one filling lasts all winter. Its special inhibitor makes it highly rust-retardant and anti-acid. And like "Zerone," "Zerex" won't attack rubber, seep or creep from a tight cooling system, or clog radiators.





"They're both made by DuPont"

DUPONT

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

"ZERONE" AND "ZEREX" ANTI-FREEZE

REG. U. S. PAT. OFF. REG. U. S. PAT. OFF.

Truck Tricks

(CONTINUED FROM PAGE 70)

A highway tractor at the end of 200,000 miles, particularly when it travels as much as 120,000 miles per year, usually has good fenders, good paint and a good cab. Instead of using new tires when we change it over to a terminal pick-up we use old tires. Many tires that won't begin to stand the gaff of highway hauling will last for a long time hauling freight in the cities in which our terminals are located. It is common practice on most truck lines to keep good tires on the long highway hauls and often tires are removed just because they are in the doubtful class.

Old Tires Better Than New

WE CAN and do use such tires on our terminal pick-up trucks, which gives us much better service than new tires on our former trucks. Availability of tire service in cities is another factor affecting the use of old tires on city pickups. They are never very far away from good tire service, and air, repairs, hydraulic jacks and everything needed can be obtained in a half hour or so and schedules are seldom interrupted due to tire delays. In a manner of speaking these old tires cost us nothing since many of them would go to the scrap pile if it were not for the light service on these pick-up jobs.

The bodies which we put on these tractors are used over and over again. When a tractor wears out in pick-up service we take the body off and install it on a tractor which is being retired from main line service.

There are several advantages in using these heavy tractors in pick-up service which we did not discover until we started using them. With big tires and dual wheels they can go anywhere. Muddy alleys, iced driveways, off-highway deliveries, construction jobs—none of these standard headaches have any terrors for these trucks and no delays are entered by reason of getting stuck.

Since they are geared down for heavy loads on the highway, they are nice to handle in city traffic and are ideal for jockeying in and out of tight places in narrow alleys, they can be loaded as heavy as a piece will hang on. We often put 10,000 lb. on them. Load restrictions are gone because we know we can haul anything we can load on them which was not the case when we used lighter trucks for this job. Power brakes are also a good advantage and make for easy handling in crowded areas.

In selecting tractors for our regu-

(TURN TO PAGE 128, PLEASE)

THE SEAL OF APPROVAL

Approved by those who know good gaskets.

For more than forty years, Fitzgerald gaskets have sealed in motive power dependably on countless motors and have satisfied millions of users.

See Your Fitzgerald Jobber.

THE FITZGERALD MFG. CO., TORRINGTON, CONN.

Branches at Chicago and Los Angeles
Canadian FITZGERALD Limited, Toronto

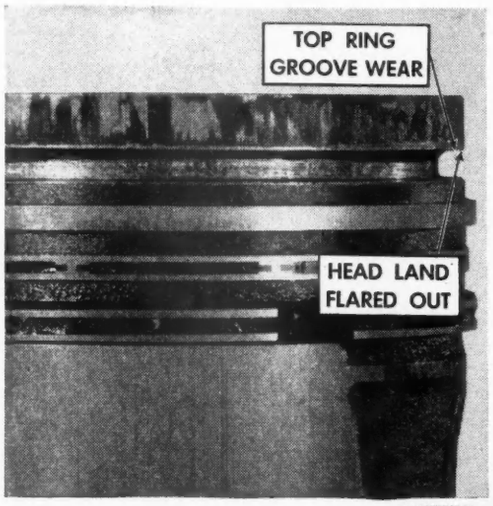
Fitzgerald
GASKETS

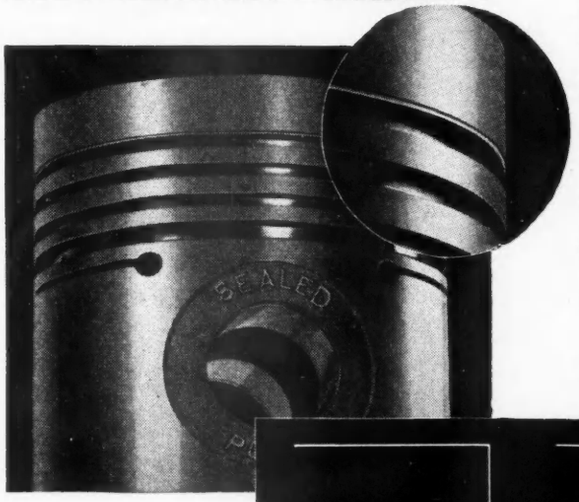
GASKET CRAFTSMEN SINCE 1906

Answer on P. 128

NOW! Worn top ring grooves restored dependably, economically with the

SEALED POWER GI-60



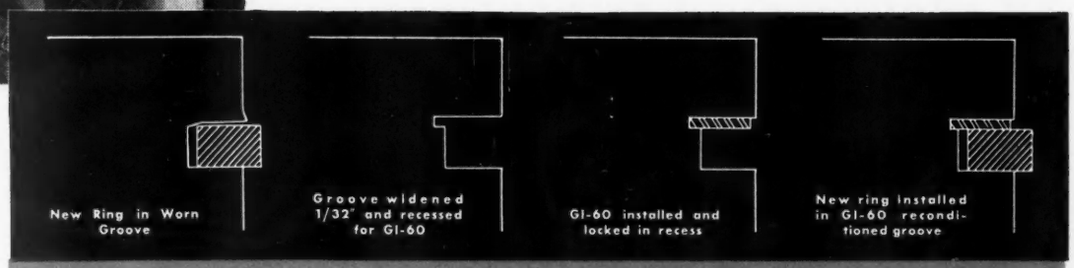


NEW rings should never be put into worn top grooves. Everybody knows that. Worn top grooves cause short ring life, ring sticking, cylinder wear and excessive gas waste. And you can't fix it by widening the groove and using a wider ring. That changes the manufacturer's specifications and results in inefficient operation. An ordinary spacer is merely a wider ring in two parts.

But you can fix that worn top groove for keeps with the new Sealed Power GI-60 Contracting Groove Insert. It's not a spacer. It doesn't float. It is anchored securely at the top of the ring groove, which has been regrooved to an absolutely true surface 1/32" wider than before, with a 1/32" recess at the top. GI-60 locks itself permanently into this recess. It becomes a heat-treated spring steel shield. It resists wear and pounding better than aluminum, better than cast iron.

Your Sealed Power distributor has the tools to furnish this service for you. GI-60 is the ONLY dependable, economical answer to top ring groove wear. It is just as good in new pistons as in old ones. It doesn't cost much. It has been tested and proved by big fleets. Ask your Sealed Power distributor for this new Sealed Power service now.

MAKES OLD PISTONS NEW — KEEPS NEW PISTONS YOUNG


New Ring in Worn Groove
Groove widened 1/32" and recessed for GI-60
GI-60 installed and locked in recess
New ring installed in GI-60 reconditioned groove

SEALED POWER PISTON RINGS

SEALED POWER CORPORATION

MUSKEGON, MICHIGAN • STRATFORD, ONTARIO

Truck Tricks

(CONTINUED FROM PAGE 126)

lar cross-country freight, it is our policy to get the lightest truck that will haul our loads. Any excess power or weight is pure waste.

Direct-Drive Transmission

WE USE a transmission that is in direct drive in fifth which is also in line with our theory of freight line operation. On this transmission there is much time saved in shifting gears. It has what we call a 142 fourth gear, that is, 142 turns of the engine to 100 turns of the drive shaft with 6.50 to 1 gear ratio in the differential. In the final analysis that gives us 100 revolutions of rear axle to 923 revolutions of the motor.

The driver can get into fourth without a lot of fiddling around. He can change at 35 to 45 m.p.h. with ease. In selecting this transmission for all our trucks we learned several things, among them that figures on paper are nice, test hills will sometimes make monkeys out of them. One type of transmission that we tried showed exactly the same ratios and same power but with different shifting arrangement. We tried it out on our pet test hill and trucks so equipped could not climb the hill without shifting gears. The transmission we selected, pulls the hill with the same truck and the same load without shifting gears. Don't ask me why. We only know that it does.

Engines Too Tight

ANOTHER problem that was simply solved once we found what to do, concerned the overhauling procedure on our engines. We followed the usual routine on our overhauls. Our equipment was good; our men were experienced, conscientious and precision-minded. But our overhauled engines were sluggish and lacking in pep. We attributed it to tight overhauls and told ourselves that when they broke in they would be better. In use they did rev up better and would finally get into the groove but it took a lot of time and care to break them in and too many slow trips.

We started one of our routine investigations of this problem by setting down all the known facts and trying to discover where any of them departed from commonly known standard procedure. We studied the overhaul records, the shop sheets and the parts records before we found out anything. In studying the records on a large number of overhauled engines we noted that all of them had to be towed to start. This pointed to our original diagnosis of a tight engine. Then it suddenly occurred to us that these engines were *too* tight.

This led to the discovery that shell

(TURN TO PAGE 130, PLEASE)

ACCIDENTS ARE FEWER . . . BECAUSE

Our Trucks Don't Speed Now!

The Servis Recorder removes the incentive to "step on it"

Your trucks, too, will do less speeding when the drivers realize they can't "make up" delays by "giving her the gas" and getting in on time. That's how the *Servis Recorder* on a truck helps to prevent speeding—and accidents. It takes away the motive for speeding—removes the cause, so to speak.

SAVES ON TIRES. Of course you understand the tire problem. The point is, you can't afford to be easy-going about it now. A tire ruined by speeding—well, that's just too bad!

ALSO SAVES ON GAS. Of course, speeding wastes a lot of gas, and it also racks the engine and wastes the very metal of the truck itself!

Yes, the *Servis Recorder* easily pays for itself. The whole story is told in one circular: "*Speeding and Accidents.*" Send for it today. The Service Recorder Co., 1375 Euclid Ave., Cleveland 15, Ohio.

"Making Up" Wasted Time Causes Most Speeding—and Speeding Causes Most Accidents.

The Servis Recorder
Helps Prevent Speeding and Accidents

● TRUE OR FALSE?

ANSWER . . . (To Question on P. 126)

True. AMA figures show a grand total of 534,470 separate companies in the automotive business. They are composed of: 1360 manufacturing; 42,255 wholesale trade; 307,375 retail trade; 79,744 service establishments; 66,366 transportation; 27,370 miscellaneous related enterprises.

(Another Cartoon Quiz is on P. 130)

If you are an executive responsible for a fleet of buses or trucks, you have worries. For instance:

a. How can you get more life out of your equipment?

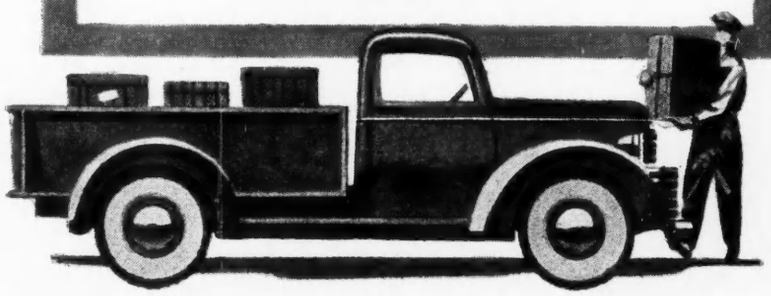
b. How can you do this, yet keep down servicing expense and time loss?

Has it occurred to you that better oil can help?

Quaker State HD Oil is made especially for needs like yours. It not only lubricates engines better and longer, but keeps them cleaner—helps prevent troublemaking deposits of sludge, gum, and sticky "varnish" from forming on working surfaces.

Obviously, better lubrication and cleaner engines do mean less servicing and longer equipment life. Quaker State HD Oil will prove this in your fleet. Try it.

IT'S QUAKER STATE HD OIL



QUAKER STATE HD OIL AND SUPERFINE LUBRICANTS

- *Use Quaker State HD Oil for trucks, buses, taxis, tractors*
- *Use Quaker State Motor Oil for passenger cars*

QUAKER STATE OIL REFINING CORPORATION · OIL CITY, PENNSYLVANIA

Truck Tricks

(CONTINUED FROM PAGE 128)

inserts for the main bearings did not always lineup lengthwise of the block. The shaft would give us the proper size to use to compensate for the wear but when these were installed, the slightest warp in the block would cause the shaft to bind. When we specified under-size bearings in all overhauls and linebored these to fit, we found that engines could be started without towing. they had more pep, the drivers liked them better and they required much less break-in time. Records showed that we got a later dividend on this piece of business because we had a smoother running engine.

End Gate Kinks

UNFORTUNATELY not all of our problems have been solved successfully. There was the matter of an improved end gate for our trailers. There was and still is a need for a trailer end gate on which the driver can stand to open the doors, one that prevents any part of the load from falling in the street and one that makes it possible to back up to the dock without opening the trailer doors first.

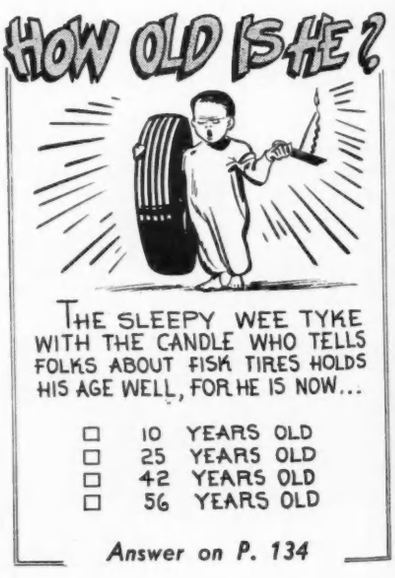
Well, I invented such an end gate and was issued a U. S. patent on it. This end gate did all the above things. It opened out and was self-supporting without side chains and when closed it stayed closed without hocus pocus hooking or locking. The leverage was so arranged that it could not be opened unless the driver deliberately opened it. It operated like a dream—no hitches—smoother and more dramatic than a cigarette lighter.

This appeared to be the answer to the trucker's prayer and we started putting them on our trailers. It was then the trouble started. This end gate did everything that could be desired of an end gate but it could not take abuse. Just as soon as the slightest bend or kink was made in the slotted side arms of this end gate it refused to work. We worked it over for awhile and studied the complaints and the types of damage it received in the regular performance of its duty and decided to take it off our trucks. We have a few of them left on pickups but all are gone from our trailers.

I still believe this gate can be made to work. We would be glad to grant a license to anyone to use our patent if they want to do further development work on it.

(TURN TO PAGE 134, PLEASE)

WABER
"Double Seal"
TUBES
THE WABER COMPANY
Maintain Schedules and Reduce Costs!
Dependability and economy are two vital considerations in truck tire performance. Why not look for these qualities in tubes?
The testing ground for WABER "Double Seal" TUBES has been actual performance on some of America's largest fleets . . . and their record stands unequalled; 25% to 70% reduction in tire costs. Freight schedules can be better timed and costly delays eliminated when fleets are equipped with the nearest thing possible to trouble-free innertubes . . . WABER "Double Seal" TUBES.
Weigh all your tire troubles . . . flats, blowouts, overheating, rim pinches . . . Consider what you would save by reducing them to a minimum, and decide to do so by equipping your fleet with WABER "Double Seal" TUBES.
WABER TUBES Are the Nearest Trouble-Free Innertubes That Money Can Buy.
Cured-On RELINER with Sealing Layer . . . Really Seals Punctures.
Cured-On FLAP with Sealing Layer . . . Really Prevents Rim Pinches.
• Specify WABER
• See Your Dealer
• Write Us Direct
THE WABER COMPANY
1824 W. 74th ST., CHICAGO 36, ILL.


HOW OLD IS HE?
THE SLEEPY WEE TYKE WITH THE CANDLE WHO TELLS FOLKS ABOUT FISK TIRES HOLDS HIS AGE WELL, FOR HE IS NOW...
☐ 10 YEARS OLD
☐ 25 YEARS OLD
☐ 42 YEARS OLD
☐ 56 YEARS OLD
Answer on P. 134

EXPERIENCE, SOCONY-VACUUM OFFERS—

Fleet Service—

Truck Tricks

(CONTINUED FROM PAGE 130)

Clearance Light Quandary

ANOTHER problem is clearance lights. We lose as many as any truck line and we tried to do something to keep them from being smashed or to make lights that would take the punishment better. We abandoned the use of the standard light and started making them in our shop out of much heavier material. On inside wiring you have to unload the trailer to find a short in the wiring, so we put it outside in copper tubing and used our heavy clearance lights. They knocked the heavy lights off just the same and when we lost one we lost more money than we did before and when we had a short in the copper tubing on the outside we had to take it all off to find it and this additional labor cost more. So we went back to standard lights and inside wiring but we still believe that the trailer wiring belongs outside.

Parking Brake Is Hero

OUR TRUCK parking brake which we invented, however, is the hero of a different story. This is also patented but it has become so popular that we have built a factory to manufacture them for others and orders have come in for it from all over the country with every state represented. (It is marketed by the Alken Co., Moberly, Mo., See CCJ, April, p. 236.)

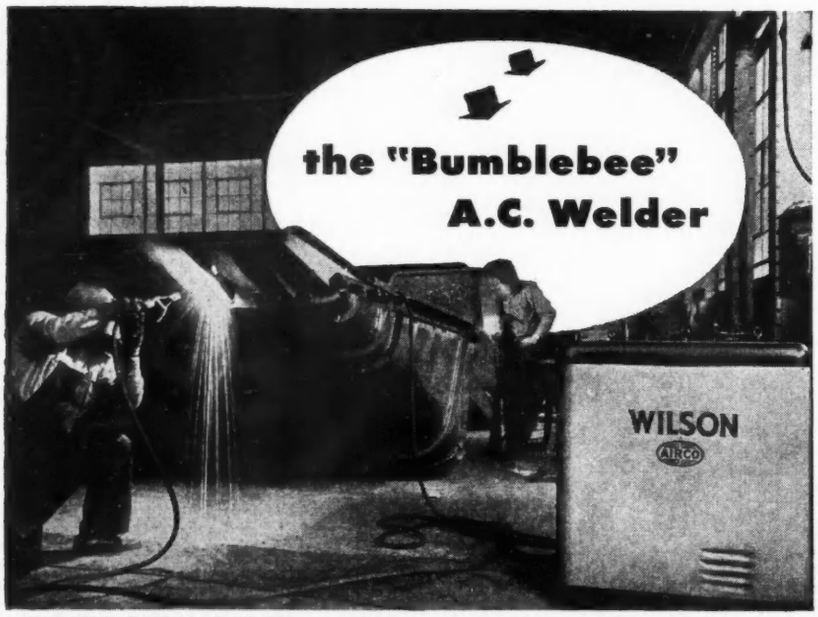
This invention came about as a result of a number of roll-offs due to the rachet and lever brake slipping its setting. The Orscheln brake lever replaces the conventional hand brake lever and due to its unique construction, the weight of the load on the on position increases the tension of the brake. It cannot slip or allow a roll-off. The brake goes on in the forward position and when in this position places the strain past the center which gives it a permanent lock until released by the driver. It uses the regular braking mechanism and only replaces the rachet and handle of the conventional type brake. When brakes wear in normal use the driver can take up the slack in the Orscheln emergency brake by twisting the knob in the handle.

We equipped all our own trucks with this brake long before we ever thought of manufacturing it for others and never had a roll-off of a truck so equipped.

And so goes the campaign to make an effort to correct all troubles that arise, particularly to interrupt the life of the repeaters.

END

(Please resume your reading on P. 72)



GIVES YOU All These Important Operating Features

1. Wide Current Range from 30 to 275 amperes for the 200 ampere model; 60 to 375 amperes for the 300 ampere machine; and 100 to 625 amperes for the 500 ampere type.

2. Improved Electrical Efficiency at rated load of 84½%, 81% and 83%, respectively for the 200, 300 and 500 ampere sizes is provided.

3. Low Open Circuit Voltage (75 volt) works to greater advantage on new AC electrodes and gives perfect ease of welding.

4. Vastly Improved Power Factor virtually eliminates the penalty charge of low power factor, and permits the use of smaller primary cables, line switches and fuses.

5. Quiet Operation; there are no rotating parts in the circuit design. The "Bumblebee" is almost silent in operation.

6. Minimum Maintenance because its operation involves no moving parts with the exception of the fan.

For more information about the complete line of Wilson "Bumblebee" A. C. welders, fill in the coupon below. Send it to: Air Reduction, General Offices, 60 East 42nd Street, New York 17, N. Y. In Texas: Magnolia Airco Gas Products Company, General Offices, Houston 1, Texas. Represented Internationally by Airco Export Corporation.

AIR REDUCTION CJ
60 East 42nd Street
New York 17, N. Y.

Send me copy of your catalog ADW-53.

Firm_____

Signed by_____

Address_____

City_____ Zone____ State_____

AIRCO **AIR REDUCTION**

Offices in All Principal Cities

Headquarters for Oxygen, Acetylene and other Gases . . . Carbide . . . Gas Welding and Cutting Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories.

● HOW OLD IS HE?

ANSWER . . . (To Question on P. 130)

42 years old. This well-known Fisk trade character made his first appearance on a California signboard in 1905. Although he soon became the pet of the Fisk organization, he was not copyrighted until 1910, becoming the official trademark of the company in 1914. The official painting was the work of the artist Edward Egleston, who used his son as a model.

(Another Cartoon Quiz is on P. 136)

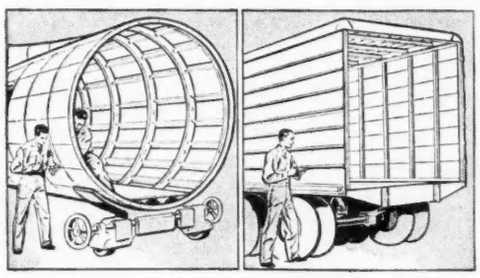
Off to Shanghai — By Aluminum Trailer and Aluminum Airplane, freight is speeded around the world. Here a cargo is being transferred from a Brown Aluminum Trailer to a Northwest Airlines Overseas DC-4 preparing to take off on one of Northwest Airlines tri-weekly flights to Alaska and the Orient.

By Highway and Skyway Lightweight Aluminum Carries the Freight

● In the air or on the road—wherever maximum strength and minimum weight are in demand—aluminum is the standard. That's why Brown Aluminum Trailers are fast become the choice of profit-conscious fleet operators like Merchants Motor Freight, Inc. They know it's the pounds in the payload that pay dividends.

Lightweight materials plus frameless airplane-type monocoque construction create this weight saving in Brown Aluminum Trailers. Deadweight is held to a minimum and the weight is in the freight where it pays off in profits.

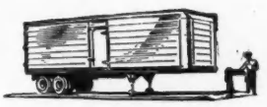
If deadweight is costing you dollars it will pay you to investigate Brown Aluminum Trailers. See the Brown representative in your area or write us.



Brown's exclusively different monocoque construction is the same stressed-skin type used in modern aircraft. No frame is used. The skin is riveted directly to stiffeners. Every pound of structural material does a maximum amount of work. No other trailer offers you this type of construction.

Brown ALUMINUM TRAILERS

Brown Industries: Spokane, Washington



The Scale tells the Tale...Light weight means more Freight

Sales and Service in: SEATTLE, SPOKANE, LOS ANGELES, SAN FRANCISCO, DENVER, MINNEAPOLIS, KANSAS CITY.

H&H Specialists

(CONTINUED FROM PAGE 71)

heads that the event occurs when a hose is left open or a leak has developed in the vacuum brake system. When the valve is burned and the head is cracked, careful examination discloses that the crack starts in the valve face and follows over to the engine block. Our theory is that the hot and cold air and the excessive contraction and expansion is responsible. We have installed hard-faced valves on intake as well as exhaust and have about eliminated the trouble.

We find, too, that we can get two, three and sometimes more refacings out of the hard-faced valves, and we hard-face all our new valves before installing regardless of make.

More Independent Thinking

OUR EXPERIENCE during the past few years in which we have kept 300 units rolling on our lines which extend from Atlanta to Chicago, is that we need to depend less on the factory and do more thinking and more work ourselves.

During the war years when we had to use a number of inferior pistons we developed considerable trouble with sticking rings and the solving of this problem has led to a routine which virtually eliminates it whether we get good pistons or bad pistons.

After many headaches, tear-downs, searching examinations, we finally discovered that the ring gland on the inferior pistons was inaccurately machined. It was not the same width all the way around or went around slightly out of square with the outside piston wall.

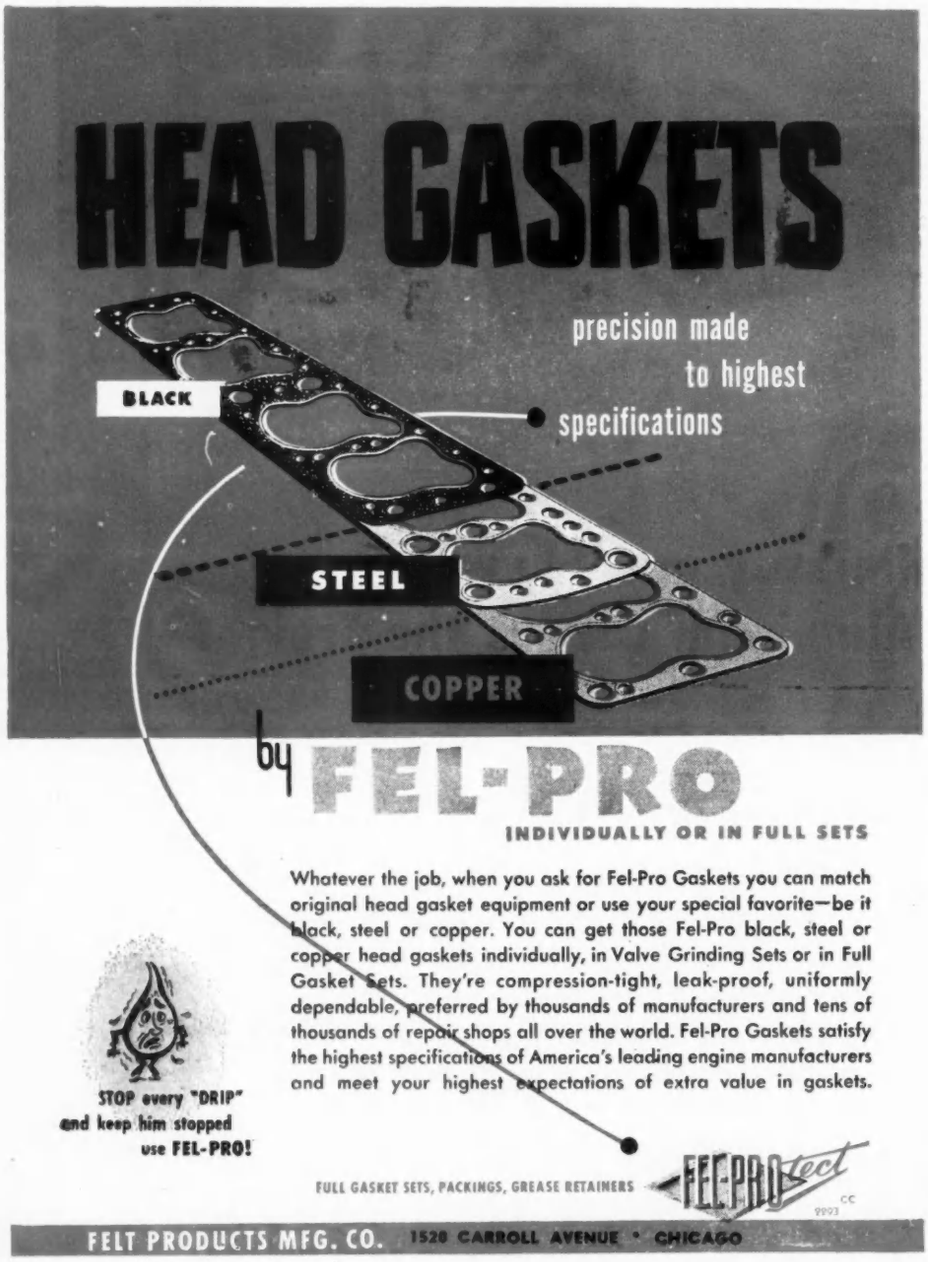
This led to a rule in our engine rebuilding department that each new piston to be installed shall be set up in an engine lathe or the piston lathe and the ring glands checked for trueness. At the same time the slot and the new rings are miked for size and a clearance of .002 to .003 is provided *all the way around.*

We found that one or two minute high spots or a very slight waver or out-of-true of the slot was causing all of our stuck rings. The same could be true of the rings, of course, but the rings were always rubbed down slightly on a stone to remove any burrs.

Castor Oil in Slots

IN ADDITION to making sure that the ring was clear, we then made sure that it received extra lubrication during its break-in period.

(TURN TO PAGE 138, PLEASE)


HEAD GASKETS
precision made to highest specifications
BLACK
STEEL
COPPER
by FEL-PRO
INDIVIDUALLY OR IN FULL SETS
Whatever the job, when you ask for Fel-Pro Gaskets you can match original head gasket equipment or use your special favorite—be it black, steel or copper. You can get those Fel-Pro black, steel or copper head gaskets individually, in Valve Grinding Sets or in Full Gasket Sets. They're compression-tight, leak-proof, uniformly dependable, preferred by thousands of manufacturers and tens of thousands of repair shops all over the world. Fel-Pro Gaskets satisfy the highest specifications of America's leading engine manufacturers and meet your highest expectations of extra value in gaskets.
STOP every "DRIP" and keep him stopped use FEL-PRO!
FULL GASKET SETS, PACKINGS, GREASE RETAINERS
FEL-PRO tect
FELT PRODUCTS MFG. CO. 1528 CARROLL AVENUE • CHICAGO

WHERE'S HOMER?
TRUCKS
CARS
HOMER SAYS THAT THIS COUNTRY CONSISTENTLY PRODUCES MORE TRUCKS THAN PASSENGER CARS. WHERE'S HOMER ?
☐ RUSSIA ☐ CANADA
☐ ENGLAND ☐ ITALY
Answer on P. 138

"We Get MORE ORIGINAL MILES— MORE RETREAD MILES—With FIRESTONE TIRES"

CITIZENS OIL COMPANY

"We find that we get more original mileage from Firestone tires and more retread miles from the Firestone method of retreading for our lowest cost per mile of tire operation."

C. J. KELLEY, General Manager
Citizens Oil Company

ONE of the largest independent oil distributors in the Southeast, Citizens Oil Company, has found that the extra quality built into Firestone tires pays off in the most miles per truck tire dollar. This extra quality, they say, proves itself, not only by delivering more miles on the original tread, but in the longer life and greater dependability they get from their worn tires, retreaded by the Firestone Factory-Method.

Delivering petroleum products to their own retail outlets and to distributors in Florida, Georgia and Alabama, Citizens Oil Company depends on Firestone tires to keep its tank trucks rolling on schedule.

Firestone tires on your trucks and Firestone Factory-Method Retreading will do the same for you—give you longer tire life and freedom from road delays which pays off to you in lowest cost per mile of tire operation.

Listen to the Voice of Firestone every Monday evening over NBC

Copyright, 1947, The Firestone Tire & Rubber Co.

Firestone

TRANSPORT TRUCK TIRES

H&H Specialists

(CONTINUED FROM PAGE 136)

When rings, pistons and connecting rods were assembled and just prior to going back into the block we soaked the pistons in castor oil. Since this oil does not burn readily it remained in the ring slots and in the pores of the piston for at least the first 200 miles. At least at the end of a 200-mile check you could still detect the slight odor of castor oil from the exhaust.

These two routines have eliminated ring trouble and also results in getting better mileage out of rings which is due to the rings getting a good break-in.

Controlled Road Break-In

OUR system involves doing everything possible to an engine at one time and one of the operations that reduces our service and tune-up is the generous and regular use of replacement engines.

These engines which are rebuilt in our own shop, get a thorough check and tune-up after installation in a tractor on our $60,000 dynamometer. Since they get almost no break-in running we expect the driver who has a new engine to break it in properly by running it more slowly and paying more attention to the heat.

It so happened that one of our rebuilt engines got a full speed schedule running one night and although it fortunately did no damage to the engine, we wondered how it could happen.

We called in the driver and asked him why he operated at scheduled speeds, making all points on time, when he had a new engine under the hood.

"New engine?" he answered. "I didn't know I had a new engine. No one told me anything about it."

It was that simple. After all just how can a driver who comes to work and climbs into the cab of a unit ready to roll and pronounced O.K., know when he has a new engine unless someone tells him?

This led to the use of our new engine card. It is a heavy card five by seven inches of red cardboard. A slotted hole in the center makes it easy to hang on the steering column or on the dash where it cannot help being seen hundreds of times during a run. It remains on the dash for two trips.

The truck number and date is written in and in large printed letters it reads, "NEW MOTOR. Please Handle With Care. Louisville Garage." There is a place for a signature.

This card is filled out and signed and placed in the cab of every unit in which a new engine is installed.

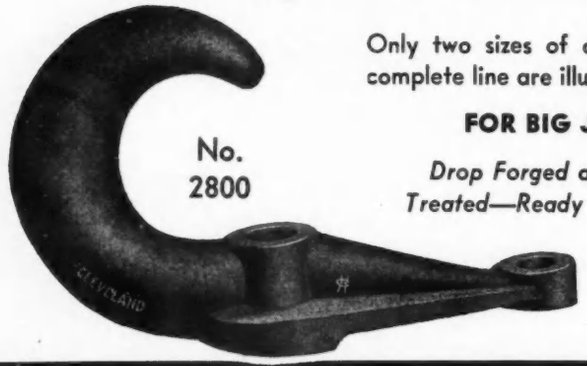
(TURN TO PAGE 140, PLEASE)

"Cleveland"
HOOKS

BINDING—GRAB—TOWING—END GATE
CHAIN—SNAP—SPREADER CHAIN

Drop forged from open-hearth steel, scientifically designed and expertly made "Cleveland" Hooks stand up under terrific strain. They've got to be tough *and are tough.*

THE PROOF OF THEIR DEPENDABILITY IS THE PREFERENCE MANIFESTED FOR "CLEVELAND" BY LEADING MANUFACTURERS.



Only two sizes of our large and complete line are illustrated below.

FOR BIG JOBS

Drop Forged and Heat Treated—Ready to Apply

CHAIN HOOKS

Size Round
7/16
1/2
5/8
3/4

Send for Catalog 22B

The Cleveland Hardware & Forging Co.
Established 1887
3264 East 79th St. Cleveland 4, Ohio

● WHERE'S HOMER?

ANSWER . . . (To Question on P. 136)

Russia manufactures 6 to 7 trucks to every passenger car. In 1939, Russia produced 25,700 passenger cars and 171,100 trucks. During the war, of course, production was almost entirely in trucks. Under Russia's new 5-year plan, she expects by 1950 to be turning out 65,600 passenger cars and 428,000 trucks.

(Another Cartoon Quiz is on P. 140)

Smart operators of trucks, buses and trailers know very well that the wheels they use make a lot of difference in their hauling costs.

That's why six out of every ten trucks, buses and trailers in this country roll on Budd Wheels. Think that over—*more than all other makes combined!*

Get the Budd story from the authorized distributor near you. He's an expert. He can figure what you can save with Budd Wheels. And he's got more than 1400 different Budd Wheels to choose from to give you wheels exactly right for best performance on your job. The Budd Company, Detroit, Michigan.

BUDD WHEELS

THE ONLY WHEEL WITH COLD TAPERED DISC

H&H Specialists

(CONTINUED FROM PAGE 138)

It is a most popular item with all the drivers and this simple card has resulted in more careful break-in of all our engines and as everyone knows the life of an engine is determined by the first 500 miles.

Thus our departmentization and the opportunity for our men to specialize within the departments and to study their work and improve their knowledge, is continually paying dividends in lower upkeep costs and better methods of doing our work.

No Wallflower Equipment

THE REQUEST of a department for additional labor-saving equipment carries extra weight because we know the man is speaking from studied experience. You put a new man in a strange department and ask him the next day what the department needs and he will likely condemn all the equipment in the department and ask for more. This same man will have a different story when he had worked every day in that department for a year. He may still want equipment but he will not want the same equipment.

The cumulative skill thus acquired leads to more productive use of the tools and equipment and makes the man a more discerning selector of new equipment. He selects equipment after most careful checking of details. He may want to go somewhere and see his contemplated machine in action. He is familiar with his own work problems, the advantages and disadvantages of the equipment being used. Knowing that he will have to live with what he selects and that it will do him the most good in making his own departmental burden lighter, he puts his best thinking on the job. That is one reason why we listen most attentively to requests for equipment and always try to provide all departments with the best we can get.

One of our main considerations is that equipment be used. We do not have the room or the time for wallflower equipment and we like to see all the units in each department in periodical use, and our men whistling at their work.

END

(Please resume your reading on P. 72)

ON HEIL TRAILERIZED TANKS

. . . and with good reason too!

The Hendrickson Tandem compact simplified design made possible by the use of *equalizer beam* construction assures *maximum* strength without excessive weight—that all-important factor in hauling heavier payloads faster . . . for less.

HENDRICKSON TANDEM

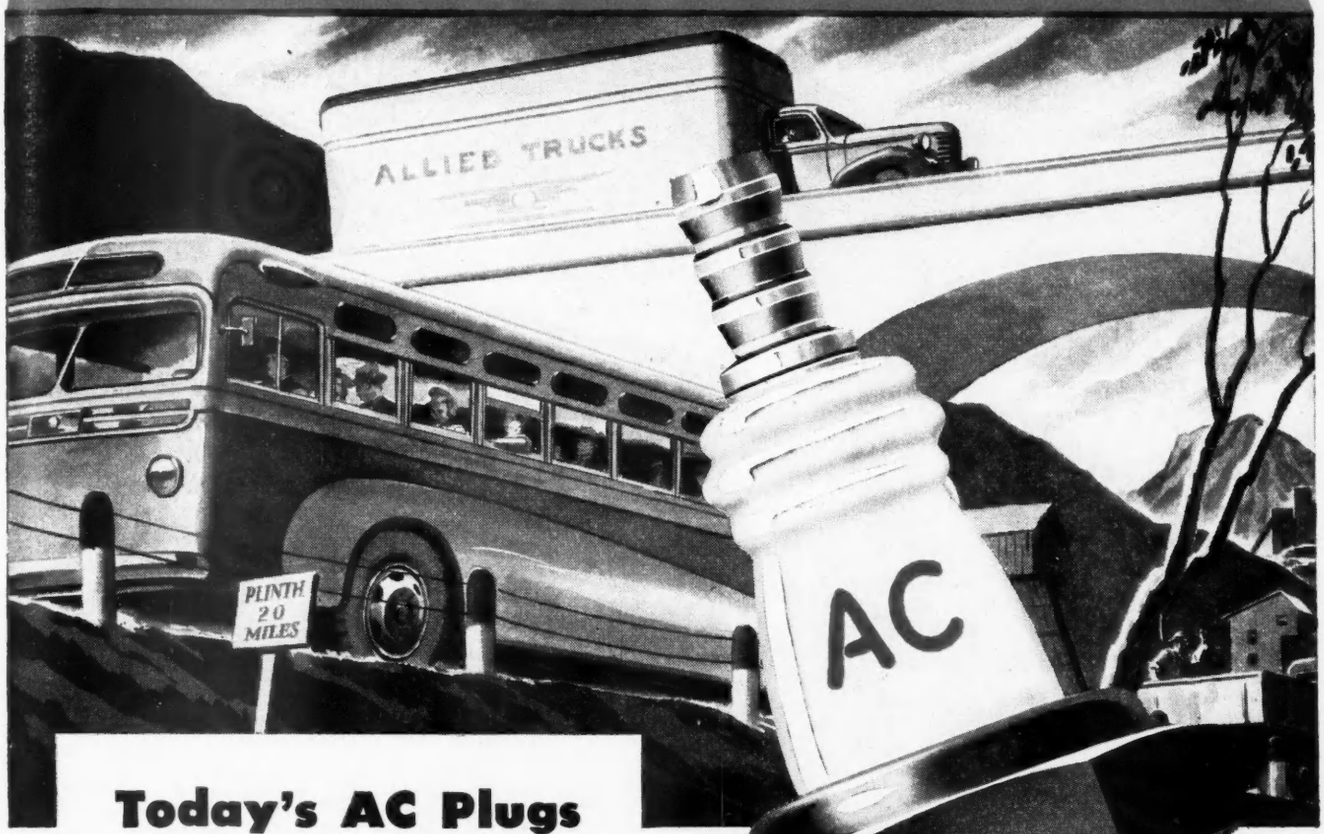
HENDRICKSON MOTOR TRUCK COMPANY
Wabash Avenue at 36th Street
CHICAGO 15, ILLINOIS

"Follow the Leader"

41,169 Miles Per Accident

With a record of 41,169 miles per accident during 1946, the tank and pump fleet in New York City of the Socony-Vacuum Oil Co., Inc., won first place among 20 other companies in the Urban Petroleum Fleets Division of the Inter-fleet Accident Reduction Contest sponsored by the Greater New York Safety Council, Inc. Clifford J. Fletcher, State Commissioner of Motor Vehicles, presented the first-place certificate to J. F. Payne, supervising engineer of the Socony-Vacuum fleet. From left to right, J. L. Risinger, Socony-Vacuum safety director; Commissioner Fletcher, Payne, Jos and L. C. Woodbridge, Socony-Vacuum supervisor of safety, New York City Division

AC'S ASSURE UTMOST RELIABILITY



Today's AC Plugs

Maintain Power

Better

(a plus value of "Wider Heat Range per plug")

The superior ceramic insulator, now in commercial AC Spark Plugs, *widens the Heat Range* of each type of plug, in each thread size. Each type, consequently, accommodates itself to a *wider* range of engine operating conditions.

As a direct result, misfiring is greatly reduced. Power is far better maintained.

This new insulator is the AC development out of which came the sensational ceramic aircraft spark plugs of bombers and fighters of World War II. It sets a new standard for spark plug reliability, —an advantage that will be worth money to you.

AC's assure Utmost Reliability.

AC SPARK PLUG DIVISION • GENERAL MOTORS CORPORATION

★ ★ ★

AC SPARK PLUGS

Driver-Mechanic Contest

(CONTINUED FROM PAGE 63)

rules. The group also served as inspection committee. By posting the prizes first we created a considerable pre-campaign interest and got the drivers to asking questions and thinking safety.

All drivers attend two regular sales meetings each month. For the contest one additional meeting was added. Movie films on safety were shown at all these meetings. They took on particular importance because of the campaign. The film which brought best results was "Hell Won't Have Him." The men are still talking about that picture and the fact that even the devil wouldn't have a careless driver.

Monthly Reports

MONTHLY reports of standings were posted. We found that posting these reports had a big effect. Men simply do not like to have their fellow workers know about bad findings for their trucks, either accidents or reports of uncleanliness. These reports listed the name of each man and the number of points he had remaining. When penalties occurred during the month a detailed explanation was given.

Daily Inspections

INSPECTIONS during the contest were made by a two man sub-committee of our safety committee. These were made whenever possible but admittedly did not cover all phases in sufficient detail.

For the new contest we have set up a "coming in and leaving" inspection which will give us a daily report of the condition of each truck. We feel that this change will give us better, more accurate results and it will include both driver and mechanic performance, especially in connection with rule 7 of the contest.

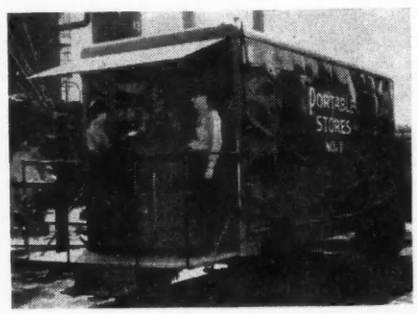
The daily check will consist of:

1. Time checked in.
2. Condition of inside, cab and back.
3. Check of all fenders, front and back bumpers, lights, and full report on any evidence of an accident.
4. Check of all tires for evidence of sidewall curb damage.

One of the most satisfying results of the campaign is that it has made our whole organization safety conscious. Headquarters and branch personnel which together account for the operation of 116 trucks have all requested to be included in the new campaign.

END

(Please resume your reading on P. 64)



Not groceries but pipe, flanges, nipples, valves, bolts and thousands of other items are carried to the job by this 10-ton trailer developed by Wood River Refinery of Shell Oil Co., Inc. Trial period indicated trailer would pay for itself in three months

CLEAN DIRTY TRUCKS FAST!

with HYPRESSURE Jenny INSTANTANEOUS STEAM CLEANER

★ Cut Shop Repair Time in Half

★ Minimize Road Failures

★ Increase Pay Mileage

★ Lessen Fire Hazards

★ Promote Safety

HYPRESSURE JENNY cleans faster—*8 to 10 times faster*—more thoroughly and more economically than any other known method. Oil, dirt and grease *disappear instantly* from any surface when JENNY'S highly atomized mixture of steam, hot water and cleaning compound is sprayed upon it. Savings in time and money effected in the operation of garages, repair shops and maintenance depots, often pay for HYPRESSURE JENNY in a few months.

We'd like to send you complete information and prices. Why not write us today?

HYPRESSURE JENNY DIVISION OF HOMESTEAD VALVE MANUFACTURING CO.

P. O. BOX 90 CORAOPOLIS, PA.

You Wouldn't Use a PASSENGER CAR *TIRE* on a *TRUCK!*

Why Use a *Passenger Car BELT?*

Truck *BELTS* Need *Extra Strength* Exactly the *Same* as *Truck TIRES!*

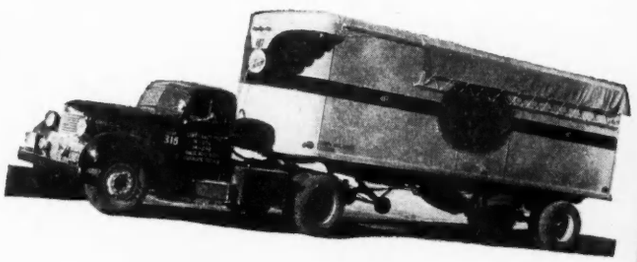
You know, when you think of it, that trucks and buses put a heavier load on *belts* just exactly as they do on *tires.*

A typical truck belt, for example, must carry more than 3 times the horsepower load of a passenger car belt. Trucks and buses run longer hours, change speeds more often, accelerate and decelerate more abruptly and—in many cases—must make far more stops and starts together with much more idling in low gear.

It is precisely because of these extra strains on truck belts that the one belt specially engineered for trucks and buses—the Gates Truck Belt—has *for years* been giving its users fully 50% to 80% longer wear in addition to other savings which are even more important.

For example:—Everytime a belt has to be replaced on a truck or bus, valuable operating time is lost. Every delay for belt servicing or belt adjustment takes its toll from *productive operation* which is your only source of income. Very often in critical instances, even slight delays can cost you a lot of dollars.

Is it any wonder, then, that big operators all over the country—operators who *keep careful cost records*—are taking the trouble to state *in writing* just how much the specially engineered Gates TRUCK BELT is saving them in belt costs and in increased operating efficiency?



Read the statements on these pages from big, successful operators—several of whom you probably know.

Then, if you want to enjoy those same savings yourself—if you want to keep *your* trucks and buses operating at lowest cost and least *lost time,* call your Gates jobber today and tell him you want the one belt that is specially engineered for trucks and buses—the one belt built with RAYON CORDS—the Gates Truck Belt.

Gates

REG U S PAT OFF

THE MARK OF SPECIALIZED RESEARCH

THE GATES RUBBER COMPANY, DENVER, U. S. A.

World's Largest Makers of V-Belts

T-476

MANY MORE MILES

MARKET BASKET CORP.
Geneva, N. Y.
". . . many more miles of service than even prewar belts."

80% TO 100% BETTER

ADAMS TRANSFER & STORAGE
Kansas City, Mo.
"Gates Truck Belts are doing an 80% to 100% better job for us."

75% MORE SERVICE

BEARD MACHINE SHOP
San Angelo, Tex.
"We're getting 75% more service than from any other belt we ever used."

WEARS 75% LONGER

WILSON TRUCK CO.
Nashville, Tenn.
". . . gives about 75% longer wear than any other belt we ever used."

70% INCREASED LIFE

LEXINGTON RAILWAY SYSTEM
Lexington, Ky.
"We have increased belt life about 70% with your Truck belts."

80% LONGER LIFE

WATSON BROS. TRANSIT CO.
Omaha, Nebr.
"Our records show 80% longer life for Gates Truck Belts."

Body Shop

(CONTINUED FROM PAGE 45)

Job No. 9. Constructed an 8 x 15 ft. insulated cargo body with all steel frame and aluminum sides—aluminum War Surplus—total cost $756. Of this, 60 per cent, or approximately $450 was for material. (See Fig. 2.)

Job No. 10. Built an interchangeable commercial freight body for a truck. Body 8 x 17 ft., aluminum sides, covered—all metal roof. It took two men 140 hours to complete this job, which ran a total labor and material cost of $1,231.55. Labor at $2 per hour, $560; material, $671.55.

On the above ten jobs, the average per job of all sorts ran $687.29. Figuring Job No. 1 as three separate jobs, the average job through the body shop ran $572.74, with labor averaging about 45 per cent and material running 55 per cent.

Costs on the above jobs do not include painting or signs. We have a separate paint shop department and each unit finished at the body shop goes to the paint shop, where the work is done and a charge is made. (See Fig. 3.)

Well Equipped Shop

OUR principal body shop equipment consists of two joiners, a rip saw and dado combination, a band saw (See Fig. 4), an 8-in. metal brake, acetylene cutters and welder, electric welders and drills, and a frame straightener.

While we have no actual cost figures for comparing costs on our work as against similar jobs completed at local body shops operated independently, we know from estimates obtained that there is a big savings in doing our own work.

Cost on jobs which have been done away from our Omaha headquarters, particularly rebuilding 26, 28, and 30-ft. trailers which have been classed as complete wrecks, show that this work cost us 37 per cent more when the work is "farmed-out." There is very little difference in the prices charged on body work over the area which we cover. There is no great difference in quality, where the job is handled by a reputable body rebuilder. However, there is an advantage in doing our own work in that we better meet our own special specifications.

Considering it from all angles, I feel that the fleet with 100 or more units can well afford to have its own body shop. More, I think that the fleet with its own body shop will find the time savings and convenience advantage nearly as great as the dollars and cents cost savings on the different jobs. Certainly our body shop is paying dividends all around.

END

(Please resume your reading on P. 46)

Cargo Care

NEEDS TRUCK "TARPS" MADE OF

Wise truck operators choose "tarps" and covers made from Flamefoil Canvas for substantial reasons:

1st Flameproofing—Stray fire or sparks can't make it blaze.

2nd Mildewproofing—Resists rot, adds months of extra wear.

3rd Water and Weather Resistance—Unaffected by moisture and extremes of temperature.

These *extra* qualities will not wear off nor wash out, because they are added to the finest quality Duck by a patented* process that impregnates every fibre. For longer wear, more satisfactory service, and lower replacement costs, specify Flamefoil Canvas for all your equipment.

FLAMECOTE Canvas Finish Gives New Life to Worn Canvas

With little labor and at low cost, ordinary canvas can be made flameproof, mildewproof, water and weather resistant with Flamecote Canvas Finish. This patented* finish may be applied by brush or spray to add extra safety and months of extra service to truck covers and tarpaulins. Available in nine colors, in one quart, one and five gallon containers.

See your canvas goods supplier or write direct.

*Manufactured Under Patents Nos. 2,044,176 and 2,299,612. Others pending.

FLAMEFOIL PRODUCTS

PHILADELPHIA TEXTILE FINISHERS INCORPORATED

NORRISTOWN PENNSYLVANIA

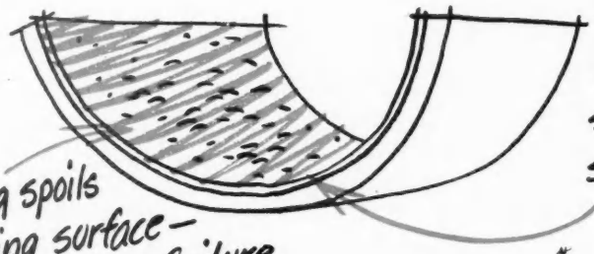
Makers of: Flamefoil Canvas • Flamefoil Fabrix • Flamefoil Beauvan and Flamecote Canvas Finish

Time Study at Diamond T

Time study engineers at Diamond T base compensations on common sense measurements of time required less unavoidable delays. It is a short cut to quality construction without penalty of extra cost

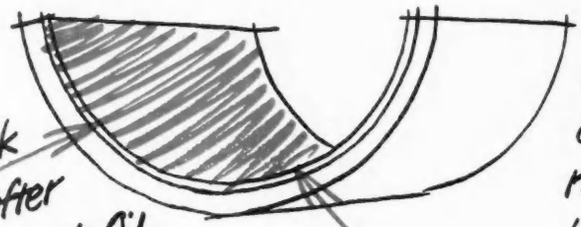
LUBE MEMO

Why it's smart to avoid "metal eating" lube oils



pitting spoils bearing surface — leads to failure

Heat and air in Diesels make many oils corrosive so they "eat" lead from structure of alloy bearings



Joe says bearings look like this after using RPM Delo Oil

1. RPM Delo Diesel Engine Lubricating Oil contains anti-oxidant compound, resists effects of heat and air.
2. Gives bearings direct protection against corrosion.

Note — arrange trial of RPM Delo Oil ... looks like it'll save us $$!

STANDARD OF CALIFORNIA • San Francisco, Calif. STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA COMPANY • Denver, Colo. THE CALIFORNIA OIL COMPANY • New York

Gramm Trailer

(CONTINUED FROM PAGE 76)

Inclined floor of cement trailer, plus aeration, eliminated need for mechanical unloader

the load. The company has demonstrated that if the load is air-suspended instead of carried on a friction surface, the cement particles will flow easily on an incline of only four degrees.

The trailer body consists of the main hopper, the load being then distributed into two inclined wall hoppers widely separated at the front but tapering to the rear so as to meet at a common discharge gate. At the bottom of each hopper is a removable and replacable "cartridge" consisting of a steel box section member with a tightly stretched canvas fabric belt—10 in. in width—at the top. This belt provides the surface on which the load rests and from which it is discharged. The belt is porous to permit air under pressure to circulate freely, thus making the load air-suspended.

The front end opening of the trailer, as illustrated, houses a single-cylinder, four-horsepower air-cooled gasoline engine, direct-connected to a Roots blower. The latter supplies air under two-pounds gage pressure through piping into each of the two cartridges mentioned above. The blower is operated only while the vehicle is unloading.

This device is said to permit a free discharge of the load at an angle of no more than four degrees, the entire load being dumped in a few minutes. Distinctive feature of this technique is that no mechanical unloading device is required.

In handling cement from a mill equipped with modern hoppers, the trailer is loaded in a matter of seconds. Provision is made in the top of the trailer to remove dust through another opening while loading so as to assure dust-free unloading at the other end.

Although the belting is expected to last indefinitely, provision is made for quick and easy replacement by removing the cartridge when necessary.

At the present time the trailers are made in two sizes for 100 or 125-barrel capacity. The former weighs about 10,520 lb., the latter 11,250 lb. Both can be fitted with either the Featheride or Gramm tandem axle.

END

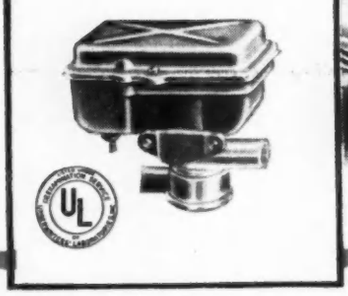
(Please resume your reading on P. 78)

Smart Alec (getting on bus): "Morning, Noah; is your ark full?"

Driver: "Nope. Only one jackass, so far. Come on in."

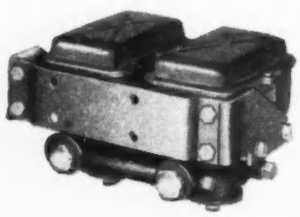
No Fuel Pump Failures on the Toughest Hauls with a...

STEWART-WARNER Electric Fuel Pump



- Ends vapor-lock and fuel pump failure.
- Operates only when needed.
- Helps maintain tough schedules.
- Insures quick starting in any weather.
- Delivers a minimum of 15 gallons of gas per hour.
- Reduces operating costs.
- Available for 6 or 12 volt installations.

110-P DUAL PUMP



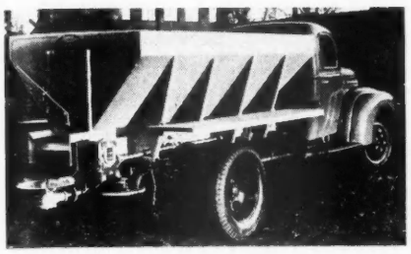
• Dual fuel pump installations are recommended where gasoline mileage is less than 5 or 6 miles per gallon. Each pump in a dual unit may be wired to a separate switch. By using one pump in a dual unit, 30% greater fuel delivery will result. The idle unit acts as a booster as well as reserve pump. Stewart-Warner Corporation, 1876 Diversey Parkway, Chicago 14, Illinois.

New Products

(CONTINUED FROM PAGE 67)

P23. Gravel Spreader

A double-duty combination Lime Spreader and Gravel-Rock Dump Body—which can be used for gravel hauling and dumping as well as for spreading lime—has recently been placed on the market by Weston Dump Body Co., Des Moines, Iowa.

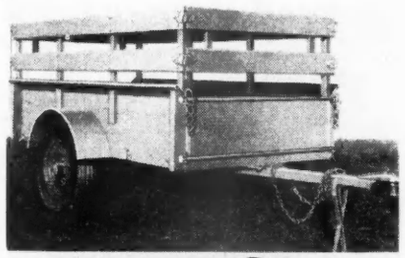


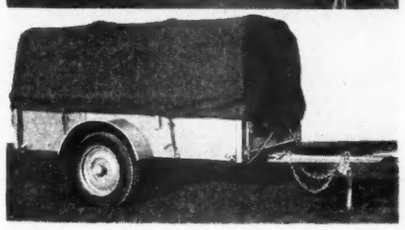
When used for lime-spreading, a 20 in. wide drag-chain conveyor carries the lime onto a 21 in. distributor fan. As the truck is driven over the field, the fan spreads the lime evenly over a strip of land 30 ft or more wide, depending upon the speed of the truck. Heart of the operating mechanism of this new Weston body is a Cone-Drive Speed Reducer, designed and produced by Cone-Drive Division, Michigan Tool Co., Detroit. It is used for transmitting power from the power take-off shaft to the drag-chain conveyor and is of the pinion-under type with a 30:1 reduction.

Use Free Postcard for More Details.

P24. Two-Wheel Trailer

The Perfection Steel Body Co. of Galion, Ohio, announces a new addition to the line in the form of the Cobey Two-Wheel Trailer. It is being made in two sizes—6 ft and 8 ft long. Both sizes are 4 ft





wide, and have 17½ in. flared steel sides. Three body extension units are avaialble (for the 8 ft size only) at extra cost. These include a 22 in. Low Stake Rack, a 46 in. High Stake Rack, and a Bow Top with Tarpaulin Cover.

Use Free Postcard for More Details.

P25. Double Coupling

Double Morflex couplings—a universal-joint type—are now in full production, according to Morse Chain Co., Detroit, Mich. and Ithaca, N. Y.

Since the Double Morflex is, in effect, two single Morflex couplings with a center plate adapter, the new model has twice the torsional resilience the single coupling. Torsional resilience is obtained through the preloaded Neoprene biscuit construction. Acting as a universal drive connection, the double coupling accommodates offset and angular misalignment of shafts.

The double Morflex permits constant velocity between driving and driven member. With no metal-to-metal contact, Morflex requires no lubrication, is proof against noise and vibration and is dielectric, according to the manufacturer.

The double coupling is available in 10 sizes, in capacities of 13 to 725 lb ft. of torque.

Use Free Postcard for More Details.

P26. Ignition Kit

A new automotive ignition kit for quick repairs and replacement on standard 7 mm high tension wiring is announced by Aircraft-Marine Products, Inc., Harrisburg, Pa.

(TURN TO NEXT PAGE, PLEASE)

Cut Driving Costs on Every Trip with a...

STEWART-WARNER Motor-Mile Tachometer

● Give your drivers this visual check to help them keep in the Economy Range... those engine speeds at which a vehicle operates with peak efficiency and economy.

At a glance your driver knows if he's within the Economy Range . . . saving up to 25% on fuel and oil, and increasing the life of his vehicle. He simply keeps his engine speed between two stationary red pointers on the face of the tachometer dial.

The Stewart-Warner Motor Mile Tachometer also records all engine revolutions—whether idling or traveling—providing an accurate record of motor mileage to show when engine re-service is needed . . . reducing maintenance costs up to 25%.

Make your trucks last longer and cost less to run by installing a Stewart-Warner Motor-Mile Tachometer on each vehicle in your fleet.

See your Stewart-Warner jobber today! Or write for complete details and prices to Stewart-Warner Corporation, 1876 Diversey Parkway, Chicago 14, Illinois.

New Products

(CONTINUED FROM PAGE 149)

The kit includes a handy, compact AMP installation tool, and a supply of the newly designed straight-on and right angle spark plug terminals, and distributor cap terminals.

The use of these terminals eliminates all preparation of the wire. The special AMP hand tool furnished with the kit makes the complete installation—cuts the wire with a convenient built-in wire cutter and installs the terminal with two simple operations of the specially designed crimping jaws for spark plug terminals, and one operation for the distributor cap terminal. No special skill is needed; perfect uniform crimps being assured by the bottoming feature of the AMP tool, according to the company.

Use Free Postcard for More Details.

P27. Electrode Holder

The A-316 Twecotong electrode holder is a new addition to the line of insulated tong type electrode holders produced by Tweco Products Co., Wichita, Kan. It is a smaller companion to the A-14 and A-38 holders which have been on the market for some time. Its development fills the requirements of the average job shop or maintenance welder using 200 amp. welding equipment.

The A-316 features light weight, compactness, and ease of operation with a No. 95 bite on a 3/16 in. electrode. The tip and body insulation is molded laminated glass cloth bakelite using the patented "Tubular-Keyed" Tweco design. The insulated spring is neoprene covered. The cable connection is a simple clamp, plus socket for soldering when desired.

Use Free Postcard for More Details.

P28. Hand Tachometer

A new hand tachometer, is announced by AC Spark Plug Division of General Motors. The device makes possible a quick and positive checking of speeds, both clockwise and counterclockwis, of motors, drill presses, shafts, power take-offs, circular saws, grinding wheels, etc. The tool will show operating efficiency of any motor or motor driven device.

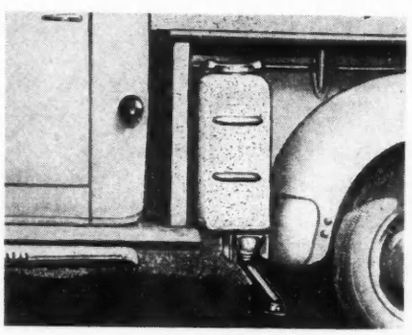
It is equipped with two interchangeable rubber tips, one for recessed shafts and pulleys, the other for flat surfaces.

Use Free Postcard for More Details.

P29. Road Sander

Highway Safety Appliances, Inc., St. Paul, Minnesota, announces the addition of two new Elston Electric Sanders to the line of Truck and Bus Sanders. The new models are for use on Pick-Up Trucks and School Buses.

The Pick-Up Truck electrically operated Sander—Model "K"—is for single tire trucks. This sander was primarily designed for use on International Harvester Pick-Up Trucks, Models K-1, K-2, K-3. This new, smaller sander incorporates the same structural features as used on the regular Elston Electric Truck Sanders, with a hopper capacity of 84 lb of grit or screened sand.



A new and more powerful solenoid assembly and the development of a different type rubber bellows adds to the efficiency and life of both sanders as a unit. The change in rubber bellows provides greater protection to the operating unit from dust and dirt.

So the operator may be in full control of the sanders, a dash panel mounted switch is provided. This switch is of a heavy duty type and is equipped with a fuse and signal pilot light to indicate when the sander is in operation, thereby providing more positive control.

Use Free Postcard for More Details.

(TURN TO PAGE 152, PLEASE)

Sure this new baby is *tough.* Like all ASF Safety 5th Wheels, the new Series 400-C has *proved* its rugged stamina. After a *year and a half* of field testing, Chuck Zimmerman, twice winner of the National Semi-Trailer Championship, says, "It's the *best* 5th wheel made."

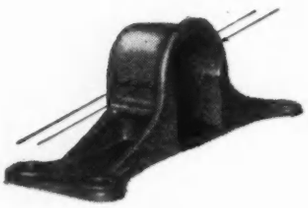
LARGER TRUNNIONS ...ADDED CONVENIENCE

This new wheel puts an end to bracket troubles. Large trunnion bearing surfaces—*not pins*—take trailer weight and tractor pull. And *you don't need a mounting plate* when used on a standard 34″ tractor chassis. It's a balanced installation—34″ frame, 34″ bracket spacing, and either 34″ or 36″ plate width.

SAFE AND DEPENDABLE

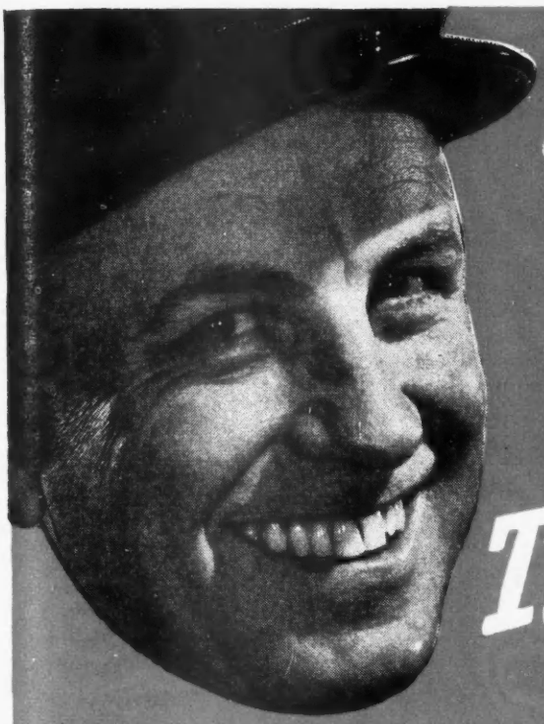
Get the facts about this new design that not only retains *all the features* for which Safety 5th Wheels are famous, but adds *new ones* as well. Write today for Folder 102. Automotive Division, American Steel Foundries, 400 N. Michigan Ave., Chicago 11, Illinois.

The new Series 400-C. Dealers and distributors wherever you go.



Sockets on the plate fit well down over the trunnions so that tractor *pull* is transmitted in a *straight line.* Plate won't "lift" under power or braking.

A·S·F Safety 5th WHEEL



"OK" TRUCKERS SAY

Armstrong Rhino-Flex Tires ride with the punch and come back for more

EVERYTIME!

Rayon cord carcass with *Rhino-Flex* construction gives more flexibility, longer wear, greater safety.

WHAT a beating Armstrong *Rhino-Flex* Truck Tires take! They stand up to the roughest, toughest treatment, mile after mile. The secret's in the carcass—*Rhino-Flex* constructed with rayon cord to ride with the punch and snap back fast.

No wonder truckers everywhere praise the hard-wearing, easy-riding Armstrong Tire.

So take a tip from truckers and roll your fleet on the safest, coolest truck tires Armstrong ever built.

Rhino-Flex truck tires are now available from coast to coast. See! Compare! You'll choose Armstrong every time.

ARMSTRONG Rhino-Flex TIRES

Since 1912, a trusted name in tires!

Plants: West Haven, Conn. • Natchez, Miss. • Des Moines, Iowa • General Sales Offices—400 Elm Street, West Haven 16, Conn.

New Products

(CONTINUED FROM PAGE 150)

P30. Lacquer Additive

Newest product to come out of the Sherwin-Williams automotive research division is "Opex Lacquer Flo," a concentrated lacquer solvent that keeps lacquers in perfect solution during the drying period even under the most adverse weather conditions.

The solution is said to impart a high gloss and excellent flow to a lacquer finish; reduce compounding to a minimum and eliminate both flushing and orange peel. It holds open the lacquer film long enough to permit the gums to flow to the top where they belong, imparting a high natural gloss which in turn materially adds to the durability of the lacquer coat. It also takes away the evil of spot work by eliminating overspray effect, according to the company.

It is economical to use since an average of only four liquid ounces or one-fourth pint is required per quart of reduced lacquer. It is recommended for use only in the last coat.

Lacquer Flo can also be added to regular thinner to provide a solvent or reflow coat for wetting an entire job after spraying.

Use Free Postcard for More Details.

No. 565693 "SLAMTITE" MEDIUM DUTY
JUST THE LOCK for this door
SIDE VIEW OF TAPERED BOLT
EberHARDWARE
is "PURPOSE-TESTED"
Simply "slam" the door on this baker's truck and it's positively locked. *The tapered bolt pulls the door up tight and holds it firmly in a "rattleproof" position.
Service dependability is assured on door to door deliveries for an unusually long period of time when construction-wise body builders turn to Eberhard for the "Slamtite" Door Lock.
Write TODAY for the Eberhard Catalog.
* Lock can be furnished with either right or left hand tumbler action. Illustration shows right hand.
EBERHARD Long Run
TRUCK BODY FITTINGS
E
EBERHARD MANUFACTURING CO.
Division of the Eastern Malleable Iron Co. 2734 TENNYSON ROAD, CLEVELAND, OHIO

P31. Fast Chargers

Two light-weight battery chargers have been announced by the General Electric Co.'s Tungar and Metallic Rectifier Division, Bridgeport, Conn.

Known as the "Overnite" and the "One Day," the new selenium-rectifier-type chargers are constructed so that they may be used without removing the discharged battery from the vehicle during the charging operation.

Both chargers are small and light enough to be mounted on a shelf or wall. The "Overnote," the larger of the two, measures 7¼ x 5 x 6 in. and weighs only 10 lb.

Charging rate of the new units is automatically tapered from high to low, as the battery becomes fully charged. A pilot light indicates when the charges are operating.

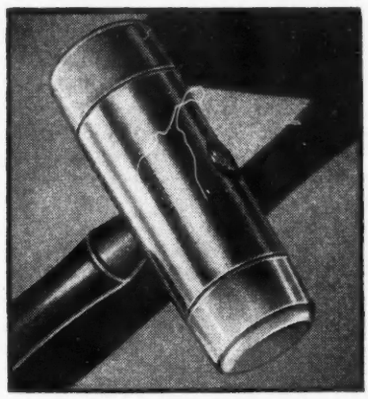
The two chargers operate on 115-volt, 60-cycle alternating current and are connected to the outlet by an 8 ft rubber cord. Equally long dc cords with attached clips connect the charger with the battery.

Use Free Postcard for More Details.

P32. Nylon Hammer

A new Nylon Soft-Impact Hammer, announced by the Herbrand Corp. of Fremont, Ohio, is said to offer the advantages of not chipping, breaking, absorbing moisture or changing shape under hard use.

Designed to afford a soft blow to the heaviest work, the nylon head absorbs impact and eliminates the possibility of personal injury by the rebound force common in other hammers. A patented interlocking head construction prevents the replaceable head from becoming loosened in use.



The new hammer is available in three sizes, No. 664 is a 32-oz. nylon hammer for heavier work such as body and fender repair. No. 662, a 20-oz. hammer, provides proper weight for fitting piston pins, gears, bearings, etc. For more delicate work on ignition, distributor, gear, bearing, etc., the No. 660 10-oz. nylon hammer is most effective.

Use Free Postcard for More Details.

P33. Welding Electrodes

A complete line of stainless steel electrodes in a full range of grades and diameters has been announced by Wilson Welders & Metals Co., Inc., New York, N. Y.

All electrodes are furnished with a heavy extruded lime type coating for d.c. appli-

(TURN TO PAGE 154, PLEASE)

WHEN IT'S A QUESTION OF PISTON RINGS, you *are* sure when you install American Hammered! These piston rings are specifically engineered for the replacement field, for every engine condition. And among the hundreds of American Hammered combinations is one that is just right for the job, in any model of any make of engine. Those to whom efficient engine performance is the measure of piston ring value rely on Koppers American Hammered piston rings. Koppers Company, Inc., Piston Ring Division, Box 626, Baltimore 3, Maryland.

KOPPERS

American Hammered Piston Rings

New Products

(CONTINUED FROM PAGE 152)

cation. In addition all but the straight chrome analyses are obtainable with a lime-titania type coating which is usable on a.c. or d.c. The slag produced by either of these coatings is easily removed.

Electrodes with the lime-titania (a.c.-d.c.) type coating offer many features not found in the lime type coated electrodes. For example, satisfactory usability on a.c. eliminates arc blow and results in easier manipulation, more uniform arc action, and better appearance of deposit. This class of electrodes can be recommended for all applications on which the lime type of electrode is used, with the possible exception of highly restrained joints on heavy sections or on steels of high hardenability.

Use Free Postcard for More Details.

P34. Cleaning Tank

A new gas-fired tank for cleaning metal parts in automotive plating is now manufactured by the D. C. Cooper Co., Chicago, Ill. The same tanks are also available, equipped with steam coils where steam heating is desired.

The construction of the Cooper Tank makes possible its use in cleaning of the largest and smallest parts, as well as transmissions, blocks, tractor parts, brake drums, carburetors, tools, nuts, bolts and a score of other products.

The tank may also be used for quickly stripping paints, baked enamel and lacquers from steel and iron parts. This tank is built of heavy gage metal for long life under the most rugged and frequent knocks by heavy equipment.

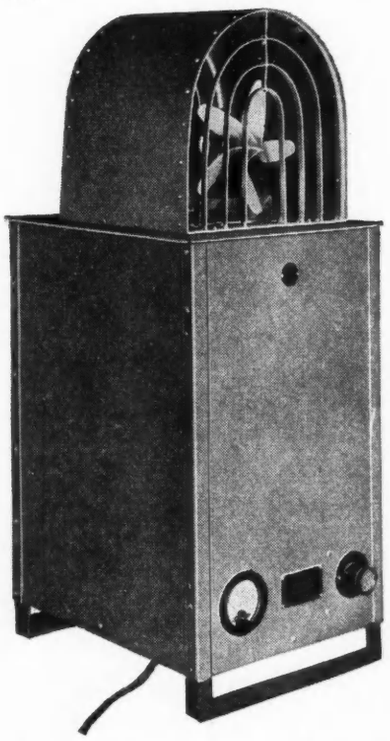
The unit is equipped with 4-in. heating pipes in the bottom of the tank. Fumes are removed through a duct which extends the length of two sides and the back of tank, to which an exhaust fan can be connected. Cooper Gas Fired Tanks come complete with thermometer, drain, overflow connections, and can be equipped with an automatic agitating device.

Use Free Postcard for More Details.

P35. Shop Air Cleaner

The General Ozone Corp., New York, N. Y., has announced an ionizing unit for destroying exhaust gases in garages and repair shops. The new unit, called the Garage Air Clear, produces ozone electrically and is said to destroy exhaust gases by oxidation.

The ozone from the ionizer is generated continuously and acts on the gases almost as they are created—without the addition of outside air. This is said to produce constant temperature and to result in fuel savings. The equipment is said to be as effective under extreme conditions of moisture and humidity as in colder temperatures.



The machines are generally located about 7 ft. from the floor. Standard units are available with capacities ranging from 20,000 to 75,000 cu. ft. No chemicals are used, and the only cost of operation is that of the electricity.

Use Free Postcard for More Details.

(TURN TO PAGE 158, PLEASE)

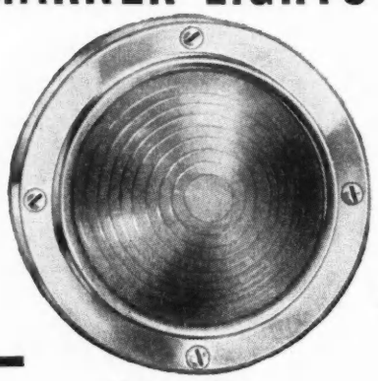
Famous
TELEOPTIC
"KLEER-KING"
CLEARANCE AND MARKER LIGHTS

FLUSH TYPE

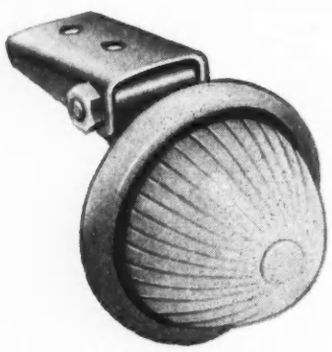
Maximum visibility, greater protection and handsomest appearance — made to high quality standards of all Teleoptic lighting equipment. Meet I.C.C. Requirements.

Equip now with these flush-type safety markers for truck or bus. Ideal for use as dome lights.

Send for your copy of new catalog showing complete line of Teleoptic auxiliary lighting and directional signal equipment.



Models 301—Amber
302—White
303—Red
311—Green



Models 307—Red
305—Amber
309—Green

BEEHIVE TYPE

Dependable protection on road, or when parked. Universal hinged mounting bracket. Can be mounted in any position. Rust-proofed finish thruout. No springs to rust in socket. Socket construction eliminates and seals against entry of water. Brass retaining ring with rubber gasket holds 2½" lens. Easy to change bulbs.

BOTH TYPES DESIGNED FOR MINIMUM BATTERY DRAIN
Ask your jobber.

THE Teleoptic Company
1245 MOUND AVE. RACINE, WIS.

...and MASTER of ALL!

the NEW AUSCO Hydraulic Curb Jack

Ideal for FAST and EFFICIENT Curb, Shop or Road SERVICE! Ausco's New Curb Jack is built to your specifications!

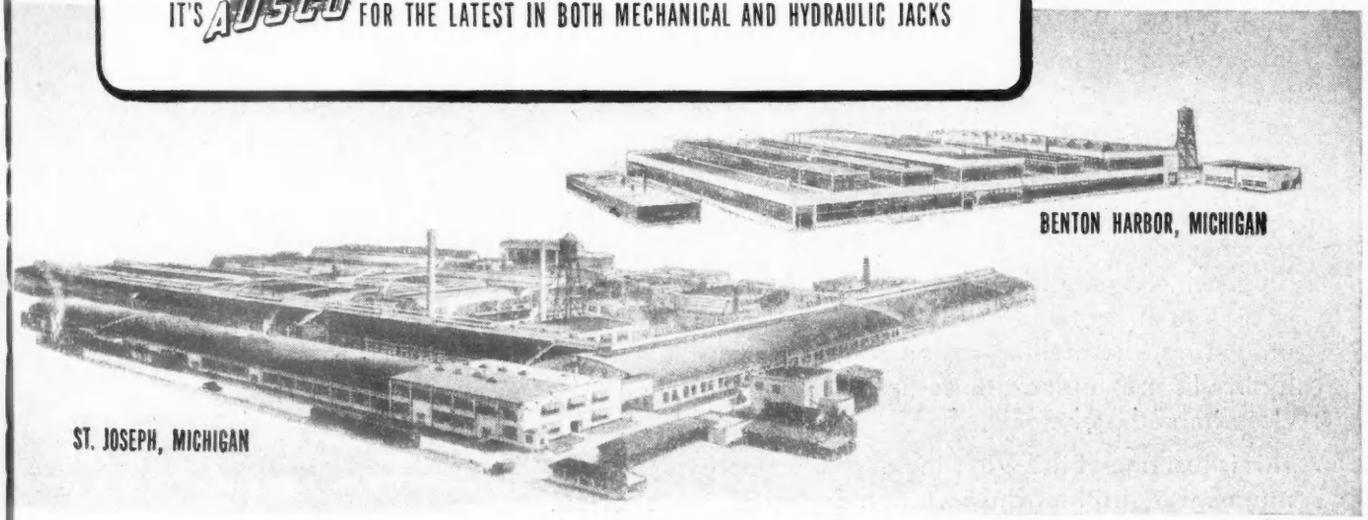
Streamlined for modern efficiency, and built to stand many years of hard wear-and-tear, its rugged one-piece malleable iron frame eliminates "springing"... the power unit is fully enclosed to protect the precision mechanism against dirt and injury. There are no exposed springs to snap or snag. Large, free-moving swivel wheels permit instant "spotting"... the sturdy saddle is low enough to get under any part of the car or truck. Power unit may be removed by simply removing four bolts for quick servicing. The handle is released in a second to give you more working space or for easy loading for road service.

The New Ausco Hydraulic Curb Jack raises a ton-and-a-half car up to 18½ inches . . . quickly and easily; lowers it evenly at the speed you want. We'll be glad to send full details on this "Master of All Jacks". AUTO SPECIALTIES MFG. CO., St. Joseph, Michigan; Windsor, Ontario, Canada.

SPECIFICATIONS:

Capacity (tons)	1½
Saddle low point	4"
Maximum frame height	6"
Maximum saddle height	18½"
Saddle size (dia.)	6"
Handle length	50"
Overall chassis	22"
Rear wheels (dia.) Swivel	2⅜"
Weight (lbs.)	80

IT'S AUSCO* FOR THE LATEST IN BOTH MECHANICAL AND HYDRAULIC JACKS



The New Ausco Hydraulic Curb Jack is designed and engineered by one of the world's largest builders of fine jacks. All of the skill and experience gained through over 30 years in the manufacturing of hydraulic and mechanical jacks is built into the New Curb Jack. Authorized Ausco Service Stations are conveniently located throughout the United States to give quick and efficient service. A complete stock of parts and service facilities are maintained at all times. Every Ausco Jack is guaranteed against defects in material and workmanship . . . and every Ausco Jack is reasonably priced to give you the finest quality and workmanship your money can buy.

New Products

(CONTINUED FROM PAGE 154)

P36. Cutting Torch

The Airco Series 9000 Cutting Torch with monel metal head and stainless steel tubes, developed by Air Reduction Sales Co., New York, N. Y., is once again back on the market.

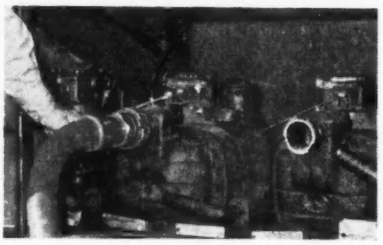
The torch head, made of monel metal assures long trouble-free service; the tubes, made of stainless steel offer great rigidity and heat resistance; the stainless steel lever and ribbed handle have been expertly designed to afford maximum ease of operation, according to the company. Moreover, all connections are silver brazed to assure permanent leakproof service.

A total of 22 interchangeable cutting tips are available for this torch, making it adaptable for every practical hand-cutting operation from removing rivet heads by washing to cutting sheet metal and trimming plate.

The standard torch is 21 in. long and weighs 3 lb. and 4 oz. It is usually supplied with 75 deg. or a 90 deg. head but straight heads are also available.

Use Free Postcard for More Details.

USES (S&J) SAFETY VALVES



SHELL OIL COMPANY
is another of the major marketers of petroleum products who use S. & J. Internal Hydraulic Safety Valves in the truck tank compartments of many of their delivery trucks.

The S. & J. system protects the public, the product, the equipment and the driver in the event of accidents.

S. & J. valves are held closed by spring tension. They may be opened by either hydraulic or air pressure. Fusible plugs which melt at 165°F. are inserted into the hydraulic or air line at strategic locations. In the event of fire during unloading, the melting of the fusible metal releases the hydraulic pressure, or the compressed air, and the valves close immediately.

This is just one of the ways in which SHELL provides maximum safety in the transportation and handling of SHELL products.

SHAND & JURS CO.
BERKELEY, CALIFORNIA
NEW YORK CHICAGO HOUSTON LOS ANGELES SEATTLE

SHAND & JURS

P37. Cleaner-Blower

Ideal Industries, Inc., Sycamore, Ill., announces a new completely redesigned portable electric cleaner which has, among its many new features, increased cleaning action and the ability to run continuously 24 hours a day, if necessary.

Powered with a 1 1/3 h.p. motor, the Ideal Heavy Duty Cleaner blows air at a velocity of 25,500 ft per min. The total weight is only 14½ lb.

This new cleaner vacuums, blows, sprays or dries and is easily and quickly converted to any of its functions. When not being used as a cleaner to vacuum or blow, the Ideal may be used as a sprayer for paint, varnish, lacquer, etc. Its fine, even spray is unadulterated by moisture because only dry air is delivered.

If drying action is desired, a heater nozzle may be attached to the Ideal blower which raises the air flow temperature to a minimum of 8 deg. It is useful in drying motor windings and electrical equipment to prevent shorts and corrosion—also used in drying paint, ink and any dampness that can't be removed by wiping.

Use Free Postcard for More Details.

P38. Cleaning Basket

A handy, four-wheel repair shop dolly for carrying machine and engine parts from the repair job to the wash rack has been introduced by Homestead Valve Mfg. Co., Coraoplis, Pa.

Known as the "Clean-Tote," the dolly saves multiple handling of parts to be cleaned as well as many other material moving jobs around the repair shop.

Mounted on 4 in. full swivel, hard composition wheels, the Clean-Tote is made in two models one of which features an interchangeable, two-deck dolly with a shallow metal tray and a specially designed wire mesh cleaning basket with an auxiliary fine mesh basket for handling small, delicate machine parts. The other model consists of the same expanded metal basket mounted on the same type of smooth-rolling, oversize castor wheels for easy handling on rough floors. A detachable "U" draw bar permits the dolly to be pulled or pushed without stooping.

Use Free Postcard for More Details.

P39. Brazing Tips

The addition of three new multiflame brazing tips has been announced by the Air Reduction Sales Co., New York, N. Y.

The tips are recommended for use in silver brazing, high temperature brazing and in the application of hardfacing alloys. Style 721 is a light, compact, multiflame tip brazed to the end of a short, completely flexible copper extension. It is available in sizes 5, 6, 8 and 10.

Style 722, which should be especially applicable to the refrigeration field, is a dual tube tip brazed to a flexible copper extension. It comes in sizes 5 and 7.

The Style 723 multiflame brazing tip was developed especially for brazing operations where it is advisable for the operator to be farther away from his work.

All of these tips will operate satisfac-

(TURN TO PAGE 160, PLEASE)

The powerful press shown in the illustration is used for forming, has a capacity of 3,000 tons, and will form side rails from alloy steel 3/8" thick, 380" long. The approximate weight of this press is 1,100,000 lbs.

IT'S THE *"Spring-back"* THAT COUNTS

This quality, plus the design, is what makes a *PARISH* Pressed Steel Heat-treated Frame different.

The frame's job is to hold all the parts of a truck or trailer in correct working position while a rough road underneath and a heavy load above are doing all they can to wrench, twist, bend, shake and rack it apart.

That goes on for years. How many years depends on how the frame is shaped and on the quality of the steel. This may mean, to you—profit or—loss in the operation of any one of your trucks.

PARISH Frames can take this grueling treatment from two to five years longer than the usual type frame, because they are made of special steel and alloys which give them a fatigue value 200% greater than steels commonly used. They are not affected by continuous side, vertical or end stresses, but "spring back" immediately to their original position.

When buying new trucks and trailers or replacing worn-out frames, insure longer, trouble-free operation by specifying *PARISH* Heat-treated Frames—the frames with the "Spring-back"—the "keel of the chassis."

PARISH
Heat-Treated Frame

The Keel of the Chassis

PRESSED STEEL HEAT-TREATED FRAMES FOR TRUCKS AND TRAILERS

PARISH PRESSED STEEL CO. *Subsidiary of* **DANA CORP.**
READING, PA.

Western Representative: F. Somers Peterson, 57 California St., San Francisco, Cal.

New Products

(CONTINUED FROM PAGE 158)

torily with various gas combinations—oxyacetylene, oxyhydrogen, oxy-city or natural gas. The latter two types of gases must be under pressure when used for brazing.

Use Free Postcard For More Details.

P40. Pick-up Dump

The "Pick-Up Dump," a pick-up size dump truck with completely automatic hydraulic cab control, has been introduced by the National Truck Equipment Co. of Waukesha, Wis.

Designed for multiple uses in short hauls and small bulk handling the body is adaptable to almost every make and body style in the ½, ¾ and 1-ton ratings.

The power pack is cab-controlled by a fingertip lever mounted on the dashboard. The hydraulic hoist raises the body to the proper angle with a full 17-in. stroke and is hydraulically actuated by the power pack operated off the fan belt.

Of welded construction, the pick-up dump body incorporates the use of heavy gage steel for sides, ends and bottom, which in turn is supported by channels and angles. The sides are flared, and each side is provided with two stake pockets. The box is supplied with a double acting tailgate. The fenders are supplied as accessories, where necessary, and mounted as an integral part of the dump box.

Use Free Postcard For More Details.

P41. Power Take-off

Production of a "packaged" Davey heavy-duty power take-off for Dodge Power Wagon trucks is announced by the Truck Equipment Division, Davey Compressor Co., Kent, Ohio.

Easily installed in the truck's driveshaft, the power take-off converts the Power Wagon into an equipment truck. Truck-mounted equipment is driven direct from the engine through the take-off. Need for separate, auxiliary engines is eliminated.

Among the take-off applications are air compressors, generators, gas well bailers, concrete mixers, farm machinery, fire-fighting equipment, welders, machine shops, pumps, insulation blowers, rock crushers and hammer mills.

Use Free Postcard For More Details.

P42. Tire Pump

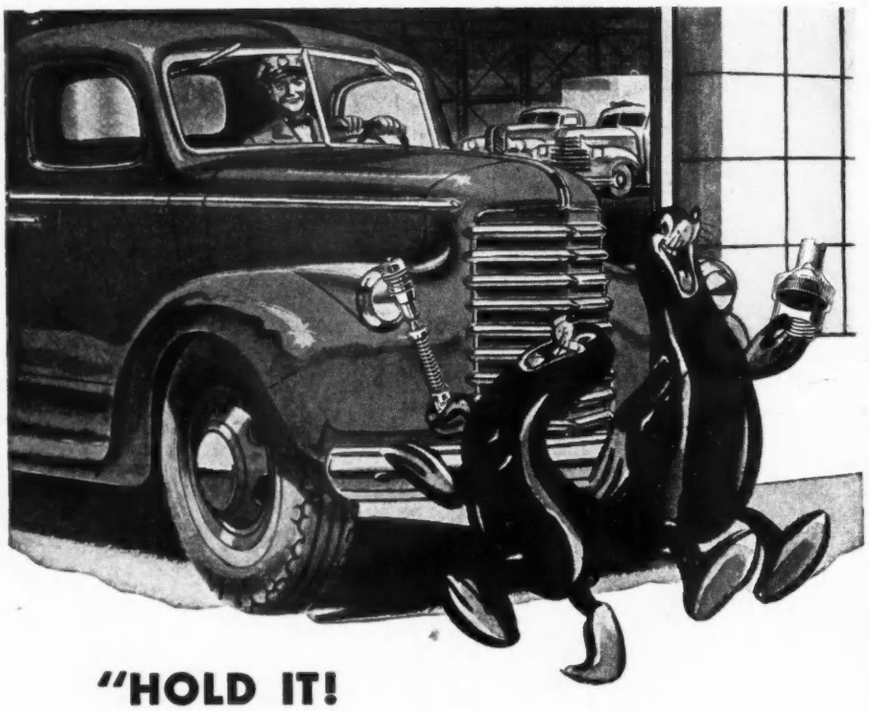
A tire pump that operates off the windshield wiper vacuum line and enables the car or truck owner to inflate a tire by merely flipping a switch has recently been placed on the market by Power Brake Parts Mfg. Co., Detroit, Mich.

The "Auto-Vac" Tire Pump, as it is called, is installed underneath the dash, the vacuum connection being made by merely inserting a "T" in the hose of the windshield wiper.

A 12-ft. rubber tube is supplied with the pump. When attached to the pump and the tire valve, all that is necessary is to flip the switch and the engine does the rest, putting in 5 lb. of air in one minute, or inflating the tire from flat to 30 lb. pressure in 4 to 6 minutes.

Use Free Postcard For More Details.

(TURN TO PAGE 162, PLEASE)



"HOLD IT!

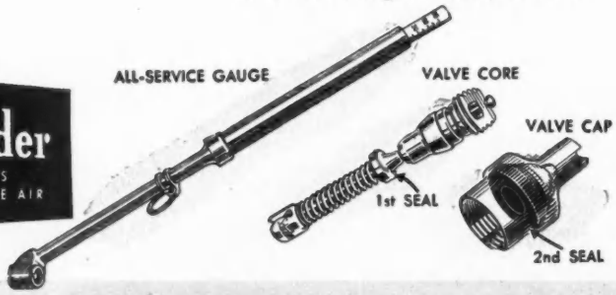
Did You Inspect Your Tires?"

Getting the longest, safest mileage from tires calls for regular inspection—which includes gauging, inflating to proper pressure and sealing the valves with air-tight Standard Caps. This common-sense tire care reduces operating costs because it helps prevent underinflation, one of the biggest reasons for short tire life.

For taking care of your tires there are no better products than Schrader. All Schrader Gauges give the most accurate readings. Schrader Cores seal the air and standard Schrader Caps are guaranteed to seal up to 250 lbs. pressure.

Order a supply of Schrader Caps and Cores today—and keep a Schrader Gauge in every vehicle.

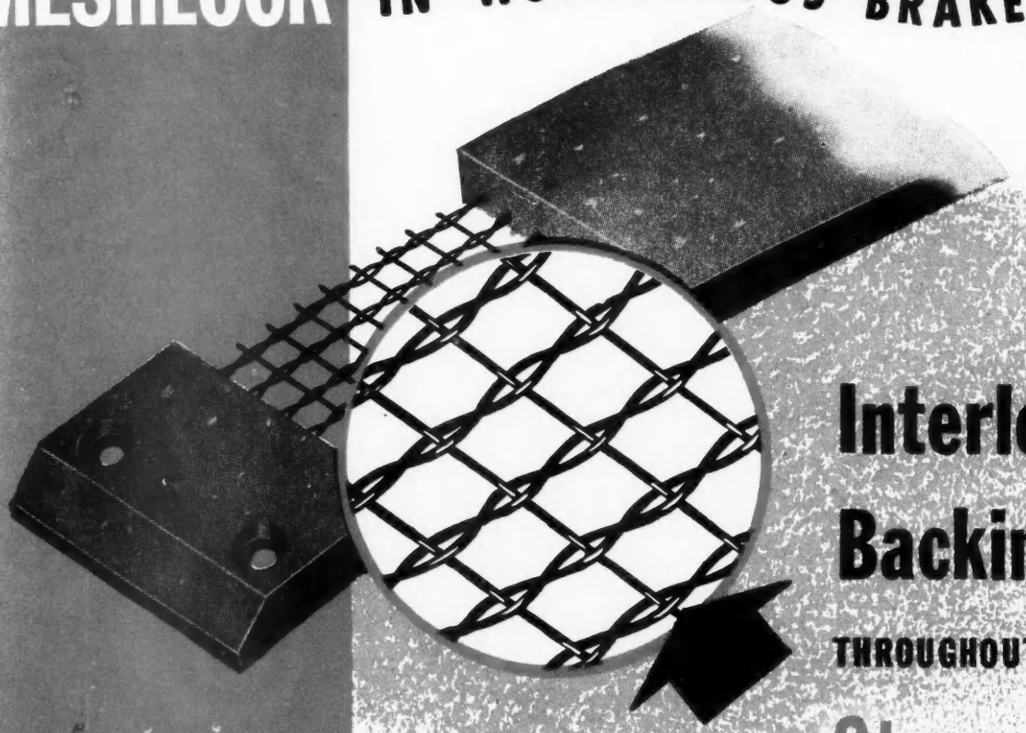
Schrader
PRODUCTS
CONTROL THE AIR



A. SCHRADER'S SON, Division of Scovill Manufacturing Company, Incorporated, BROOKLYN 17, N. Y.
Originators of the Comparative Air Loss System for Flat Tire Prevention

The Foamite Firefoam announced by American-La France Foamite Corp. of Elmira, N. Y.

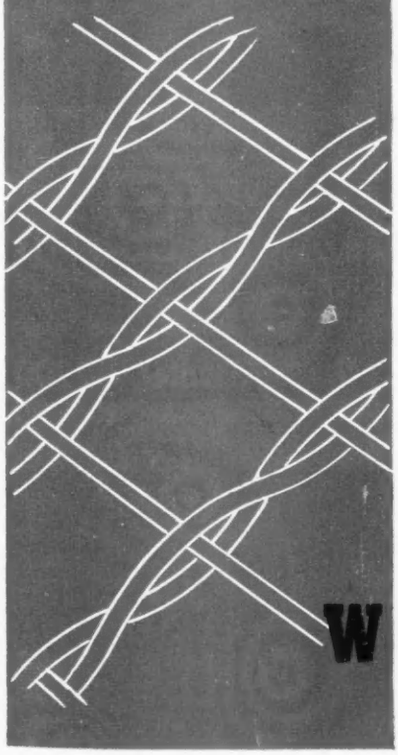
MESHLOCK IN WORLDBESTOS BRAKE LINING



Interlocking Backing

THROUGHOUT LINING GIVES

Stronger Reinforcement



• No need now to put up with "spot-bulge" when riveting lining to brake shoe. No need now to stand for spoiled linings, spongy brake pedal, "daylight" between lining and shoe. Avoid all these with Worldbestos Brake Linings featuring the Meshlock method of wire back reinforcement.

• By introducing Meshlock, Worldbestos puts into its reinforcement two interlocked tough wires where only one is the accepted practice. This double backing throughout the entire length forms a lock in the wire mesh that prevents the lining from yielding to the stress of riveting. The lining goes on flat to the brake shoe at all points, and stays flat in service.

WORLD BESTOS Corp.

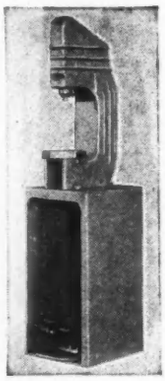
NEW CASTLE, INDIANA

New Products

(CONTINUED FROM PAGE 160)

P43. 10-ton Press

Air Hydraulics, Inc., of New York, has developed a new 10-ton foot-operated hydraulic arbor press suited for machine shops, tool rooms, and garages for press fitting, staking, assembly, riveting, crimping etc. The pressure is entirely hydraulically controlled by foot-pump unit which leaves the hands free to handle and position the work. Each stroke of the fast-speed center pedal moves the ram 7/8 in. down to work. The right pedal or power pump moves the ram down 1/16 in. with each stroke. A touch of the left pedal and the ram returns to its original position.



The foot-pump block is of Meehanite metal to withstand high pressure. Pump base and pedals are cast of semi-steel. A removable screen is fitted to oil reservoir to keep out foreign matter which might damage pump and ram cylinder. Delivers pressures up to 20,000 lb and requires very little effort to operate.

Use Free Postcard for More Details.

P44. Flexible Shaft

Wyzenbeek & Staff, Inc., Chicago, Ill., announces a new flexible shaft machine known as the Wyco "Streamflex." This new model is designed to combine increased convenience and complete safety in a streamlined, cabinet-enclosed, multi-speed machine. It is of all welded steel construction. Pulleys and belts are enclosed in the streamlined, dust-free cabinet. The entire cabinet swivels on ball-bearing motor base, with 16-in. tool tray. The locking shaft holder holds shaft and grinding wheel for stationary grinder.

Five models are available: ½ hp.—1400-2400-4500 r.p.m.; ¾ hp.—1800-3600 r.p.m.; ¾ hp.—3600-6000 r.p.m.; 1 hp.—1800-3600 r.p.m. and 1 hp.—3600-6000 r.p.m.

Use Free Postcard For More Details.

P45. New Electrodes

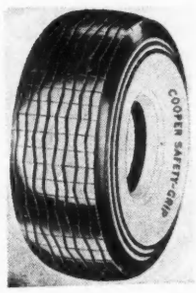
The Eutectic Welding Alloys Corp. of N. Y. has recently announced the development of two new steel electrodes called "Low Temperature" EutecTrodes 66 AC and 660 DC, for arc welding steel at low base metal heat.

The electrodes are flux-coated universal electrodes for welding of all types of steel. They produce a smooth, high tensile, crack-resistant weld, and are particularly suitable for vertical position welding. For the troublesome job of welding low carbon steel to high carbon, EutecTrode 66 can be successfully used. Being a universal rod for all types of steel, EutecTrodes 66 eliminates the necessity for determining the base metal before welding.

Preheating is unnecesary when using EutecTrode 66. This alloy is extremely useful for welding parts that would be difficult to preheat because of the size, inconvenience in handling, and time lost. It can be used for welding low-alloy, high-carbon, cold-drawn, and heat-resistant steels; also, overlaying and filling on all types of cast iron alloys that are used on glass molds, dies, and similar parts.

Use Free Postcard For More Details.

P46. Safety-Grip Tire



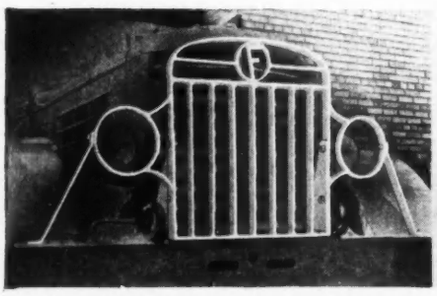
A new premium-priced, 5-ply tire has been placed on the market by the Goodyear Tire & Rubber Co., Findlay, Ohio. Called the Cooper Safety-Grip, the new tire features armored rayon cord body, safety-grip traction design, more natural rubber, wider and flatter mileage tread and a 24-month road hazard guarantee.

Use Free Postcard for More Details.

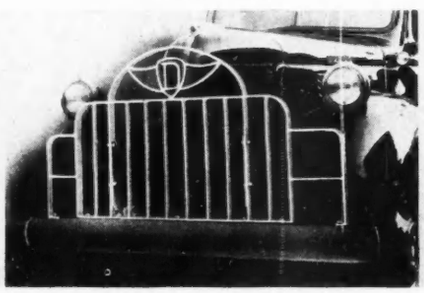
END

(Please resume your reading on P. 68)

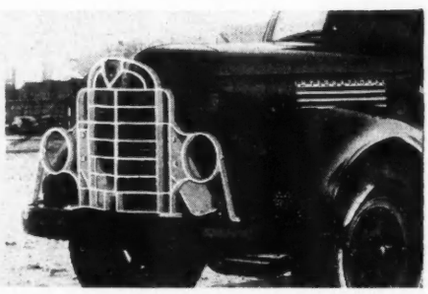
(Advertisement)



Federal: **List Price from $35.00 to $48.00. Depending on Model.**



Dodge: **½-1 Ton. List Price $34.00**
1½-2 Ton. List Price $38.00



International: **List Price from $40.00 to $60.00. Depending on Model.**

LIBERAL DISCOUNTS TO DEALERS AND FLEET OWNERS • PRICES FOR OTHER MODELS ON APPLICATION

Better Grille Guards* *Sold from Coast to Coast* by BUSTIN

FOR ALL POPULAR MODELS OF 1946-1947 TRUCKS

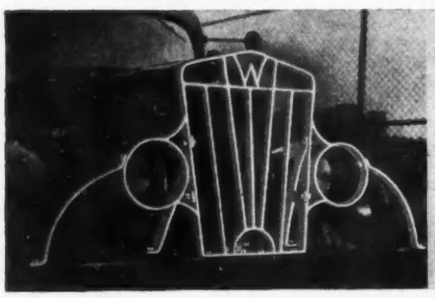
F.O.B. Our Plant

ASK YOUR DEALER OR WRITE DIRECT TO

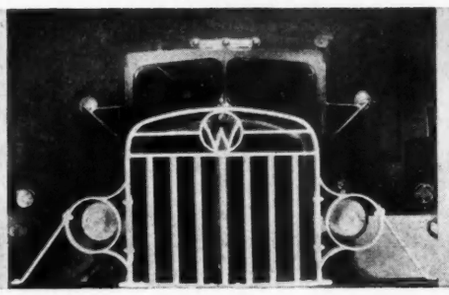
*All Patent Pend. Designs

BUSTIN IRON WORKS, INC. • 110 East 130th St., New York 35, N.Y. • ATwater 9-2200

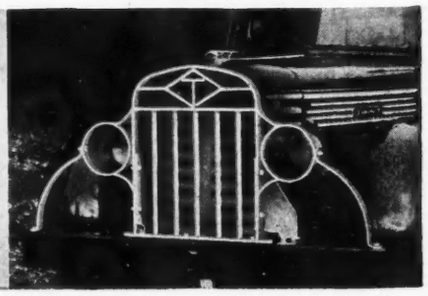
White: **WA-22, WB-22**
List Price $42.00



Ward LaFrance:
List Price $58.00



Diamond T: **#201, 306, 404, 509, 614.**
List Price $38.00

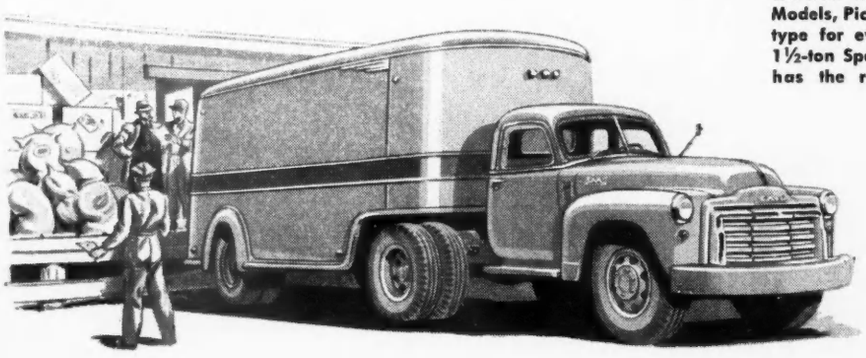


Announcing The New IMPROVED / WAR-PROVED GMCs

THERE'S A
Better Looking
Better Riding
Better Built
GMC FOR YOUR JOB

New light and medium duty GMCs bring truck styling, comfort, safety and stamina to a new all-time high. All-steel cabs are 3¾ inches longer and 9⅝ inches wider than prewar. They have new tubular frame adjustable seats with nearly double the number of seat springs . . . new windshields that are 5½ inches wider and 2 inches higher . . . new larger doors and windows . . . new ventilation with provision for fresh air heating . . . new insulation, soundproofing and weather sealing. And these new GMCs have many improved, war-proved engine and chassis advancements. See your GMC dealer . . . now . . . and get complete details!

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION



The new GMC light and medium duty line includes Tractor Models, Pickups, Platforms, Stakes, Panels, etc. . . . a truck type for every type of hauling. Illustrated is the new 1½-ton Special Tractor Model of 149″ wheelbase, which has the recommended 72″ CA dimension, standard.

THE TRUCK OF VALUE

GMC TRUCKS

GASOLINE • DIESEL

Detroit Dispatch

(CONTINUED FROM PAGE 80)

to cement mixers, tank wagons, and a refrigerated truck capable of maintaining a temperature of 10° below zero. More than 2000 Dodge dealers attended, accompanied by an estimated 15,000 operators.

Chevrolet Finds Oldest Truck

Chevrolet Division has delivered a new 1947 truck to Leslie A. Storey of Jordan, Montana, in exchange for a 1918 model Chevrolet truck. The award was made to Storey as winner of Chevrolet's oldest truck contest which attracted more than 7,000 entries. Built October 7, 1918, the truck was one of 384 built during the first year of Chevrolet truck production. It has had one complete overhauling, made in 1929. The owner has no conception of the number of miles the truck has operated.

"Controlled Combustion"

Investigation into a new automobile company has uncovered an interesting claim of interest to truck operators. John T. Tjaarda, Detroit industrial designer, reports that a principal feature of a new car which his proposed company, North American Motors, Inc., plans to build is "controlled combustion." He said that through new developments in ignition and manifolding some spectacular results in fuel economy have been obtained. He stated that in experimental runs with a 1½ ton Ford truck carrying a two-ton load, gasoline consumption ranged as high as 17 to 18 miles per gallon. He said there is no detonation and the engine runs on 65-octane gasoline but will not perform with high octane fuel. Further details of the controlled-combustion, he said, will be withheld until patent negotiations are cleared up. He said the new car his company will build at Grand Prairie, Texas, will have a 100 in. wheel base, individual wheel suspension, a weight of about 2000 lb. and will be powered by a Continental engine basically the same as that currently used by Kaiser-Frazer. He estimated that the car will sell for $1095 f.o.b. Dallas for the two-door sedan. Production is expected to get under way in the third quarter of next year.

END

(Please resume your reading on P. 82)

ANYWAY YOU LOOK AT IT....

TRADE MARK YANKEE REG. U.S. PAT. OFF.

is Outstanding!

SAFETY

High fidelity vision that eliminates tricky illusions. No distortion. Easily adjusted to suit specific "seeing needs" of all drivers.

QUALITY

Over 32 years experience...since 1915. Technical research, up-to-the-minute production methods and painstaking attention to detail. Yankee Mirrors are the finest in the world.

ECONOMY

Built-in-durability, metal parts bonderized, "know-how" in processing mirrors — all add up to keep your replacement maintenance down!

NO. 245 TELESCOPIC ADJUSTABLE MIRROR WITH 5" HEAD

- Extends from 19¼" to 27¾".
- Universal Mounting.
- Adjustable to any position.
- Heavy Steel Tubing.

NO. 238 6" MIRROR HEAD

Write for Catalog

See Your Jobber

245H—REPLACEMENT MIRROR HEAD Made to fit the No. 245 Telescopic Adjustable Mirror.

CONVERSION KITS

STOP AND TAIL LAMPS

DIRECTIONAL SIGNALS

YOU'RE SAFE WHEN YOU SEE WITH YANKEE

YANKEE METAL PRODUCTS CORP., NORWALK, CONN., U. S. A.

Washington Runaround

(CONTINUED FROM PAGE 82)

Congress Adjourns

Congressional failure to act on several important pieces of legislation leaves the transportation industry virtually unchanged so far as revisions in major Federal controls are concerned.

Among the bills which failed of enactment in the closing days of the 80th Congress, first session, were the industry census bill (Hr 1821) which provided for collection and publication of transportation statistics, and the Bulwinkle rate bureau bill (Hr 221) which exempted rate bureaus from provisions of the Sherman and Clayton antitrust acts.

Other last-minute Congressional developments affecting the transportation industry were the announcement of forthcoming studies by the Joint Labor Committee, created under the Taft-Hartley Act, into labor-management relations in the trucking industry, and shelving, for the time being, of numerous bills to raise minimum wage levels Various minimum wage rates proposed in the bills ranged from 60 to 75 cents per hour. The Interstate Commerce Commission warned truckers now operating under temporary authority to apply immediately for permanent authorities. ICC's authority to issue temporary rights expires Sept. 27, 1947, since congress failed to renew it in extending the second war powers act.

END

(Please resume your reading on P. 84)

Mother (from upstairs): "Mabel, are you entertaining that young man down there?"

Mabel: "No, mother, we're just talking."

FLEETMAN'S LIBRARY

A Review of Booklets and Catalogs Fleetmen Will Find Helpful

BUDA HEAVY-DUTY ENGINES, a new 16-page, three-color booklet describing and illustrating four heavy-duty diesel engines ranging in size from 180 to 300 h.p. The publication gives construction features, details regarding combustion, installation and design. Issued by The Buda Co., 154th and Commercial Ave., Harvey, Ill.

SERVICING THE ZERO-LASH HYDRAULIC VALVE LIFTER is a 16-mm. sound motion picture of about 30 min. running time devoted to the construction, operation and servicing of hydraulic valve lifters. Through simple technical animation this film explains the method of operation of this device. Prints of the film are available on a loan basis without obligation or may be purchased outright at cost. Inquiries should be directed to Valve Division, Eaton Mfg. Co., Detroit 13, Mich.

INTERSTATE COMMERCE AND TRAFFIC LAW, a 672-page, bound volume covering a selection of leading cases and guiding principles in transportation and traffic management, administration and law. This volume has been developed as the result of a search for cases decided by the U. S. Supreme Court or other courts dealing with the major aspects of interstate commerce and traffic management. Cases selected have been arranged according to the principle subject matter of the decisions.

This book will be an aid to those who deal with transportation and traffic problems of supply, services, rates, claims and other subjects, and who wish to know what the courts have held to be the rights and duties of carriers and shippers or users of transportation services.

Prepared by G. Lloyd Wilson, LL.B., Ph.D., Professor of Transportation and Public Utilities, University of Pennsylvania. It is available from Prentice-Hall Inc., Publishers, 70 Fifth Ave., New York, N. Y. The price is $7.35.

FEDERAL TRUCKS, a new folder which illustrates and describes the various trucks now under production by the Federal Motor Truck Co. The folder includes cuts and explanations of many features of Federal design. Send requests to L. I. Seaver, Asst. Sales Mgr., Detroit 9, Mich.

HART CATALOG, a 16-page, 2-color booklet offering informative data on customized body designs. The publication illustrates and describes Hart operations in engineering, designing and manufacturing parts, panels and sections for truck bodies, trailers, truck cabs and buses. It shows available parts such as body posts, windshield assemblies, roof rails, rub rails, cross sills, lintels, roof panels, cab roofs, corners and fenders. Write Hart Pressed Steel Corp., Elkhart, Ind.

OVER THE ROUGH SPOTS, a 48-page building mainteance guide, providing the answers to construction problems about floors, walls, foundations, roofs, etc. Write the Stonhard Co., 403 North Broad St., Philadelphia 8, Pa.

RINGLINER FULL POWER PISTON RING CATALOG, containing complete information on piston rings to fit all makes and models of cars, trucks, buses and commercial engines, including late 1947 models. Material has been arranged to expedite the locating of information on piston size, number and type of rings required. Copies may be had on request to Moog Piston Ring Co., 6650 Easton Ave., St. Louis, Mo.

GROBET ROTARY FILES, a 16-page illustrated booklet listing Grobet rotary files for every industrial purpose. These include ball, oval, cylindrical, tree, cone, inverted cone, and other shapes, each in a wide

(TURN TO NEXT PAGE, PLEASE)

Tommy Tuneup says-
HYGRADE TOOLS and TESTERS CUT MY WORK IN HALF!
Listen, men—If you want to save yourself work get wise to Hygrade Tools and Testers, like I did. Jobs done with Hygrade Tools are turned out in a jiffy. And Hygrade Testers save valuable time by giving you the answers at the start—you don't have to go back and do the job over. I own a lot of these tools and testers—and I wouldn't part with them for their weight in gold!
RUNNING ENGINE TESTS VACUUM-LIFT
CT 150 TOOL CHEST FOR SERVICING CARTER
CPA-115 -VAC-O-SCOPE
CT 35 ENGINE COMPRESSION GAUGE
JJ 75 JIFFY JIG
CT-50 CARBURETOR ECONOMIZER VALVE TESTER
CPA-122 TESTER FOR POWER-JETS + CHECK-VALVES ON CARBURETORS
PT-40 ROCKER ARM ALIGNMENT GAUGE FUEL PUMP
PT-21 TESTMASTER FUEL PUMP
DT-120 X FUEL PUMP REPAIR TOOL KIT
PT-10 PORT-O-METER CHECKS PRESSURE + VACUUM IN FUEL PUMP
THE mechanic's problems have always been our problems. We help you do a 100% satisfactory reconditioning job on all units covered by the Hygrade Line—by furnishing you with skillfully designed Tools and Testers that speed up your work and swell your profits. On Fuel Pump and Carburetor work, particularly, you'll find Hygrade's Tool-and-Tester set-up a valuable aid. Follow Tommy Tuneup's example. Add Hygrade special purpose Tools and Testers to your personal kit. You'll never regret the investment.
See your jobber—Today.
HYGRADE PRODUCTS CO., INC.
35-35 Thirty-fifth St., Long Island City 1, N. Y.
HYGRADE
REPLACEMENT PARTS
Hygrade Line AUTOMOTIVE PRODUCTS
ENGINEERED FOR OLD UNITS
FUEL PUMPS KITS AND PARTS
CARBURETOR KITS AND PARTS
SPEEDOMETER CABLES-CASINGS-PARTS
FUEL LINES AND FITTINGS
SHOCK LINKS BUSHINGS AND PARTS

Fleetman's Library

(CONTINUED FROM PAGE 167)

range of diameters and lengths of cut. Write The Grobet File Co. of America, 421 Canal St., New York, N. Y.

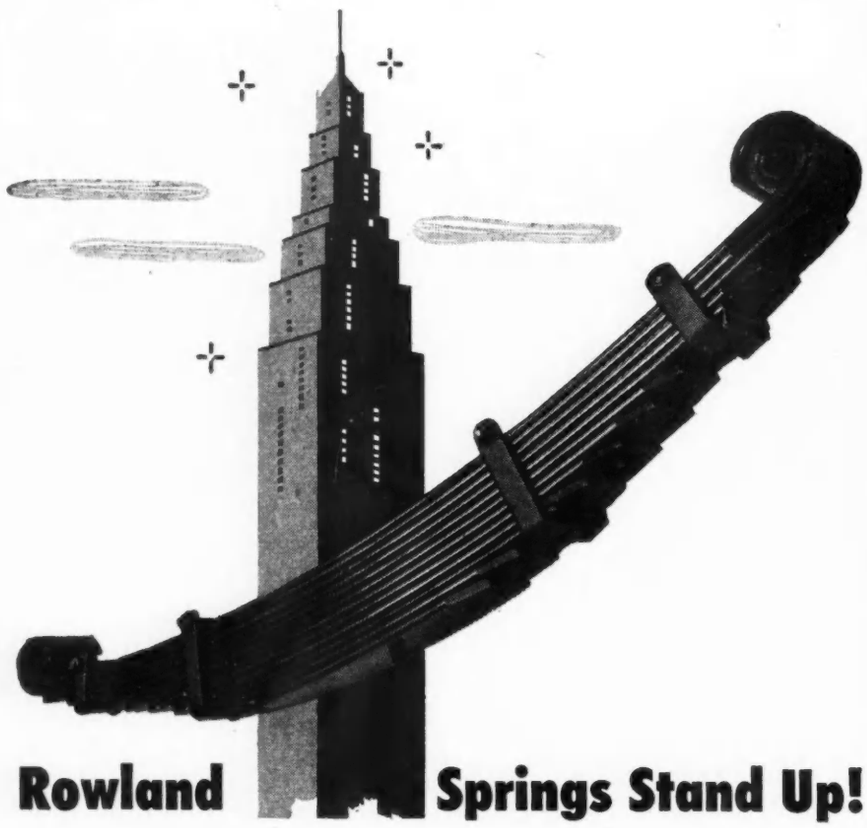
KEEP IT CLEAN, a new folder issued by White Engineering and Mfg. Co., describing the new Model No. 46B vapor steam cleaner. Included is a diagram showing all parts and operating features. Write the company at 135 W. Passaic St., Rochelle Park, N. J.

BULKBINDER CATALOG, an 8-page publication describing heavy-duty strapping tools and equipment available from the A. J. Gerrard & Co., manufacturers of Steelbinder equipment and supplies, 221 N. LaSalle St., Chicago 1, Ill.

FLEXIBLE SHAFT MACHINERY, a 32-page, illustrated catalog showing the complete Wyco line of flexible shaft equipment, now available through Wyzenbeek & Staff, Inc., 838 W. Hubbard St., Chicago 22, Ill.

CATALOG No. 9, published by Littlefuse Inc., 4757 Ravenswood Ave., Chicago 40, Ill. The manual gives a brief historical survey of fusing and announces the company's improvements, revisions and additions to its line of fuses, fuse mountings and circuit indicators.

OAKITE-VAPOR CLEANING UNIT BOOKLET, a 12-page publication describing the new, improved vapor steam cleaning unit. Includes data on construction, engineering specifications, types of models available and job applications. For free copies write Oakite Products, Inc., 22 Thames St., New York 6, N. Y.



Rowland Springs Stand Up!

Call nearest Rowland Distributor. He's supplied by these branches:

ATLANTA 3, Ga., William and Harvey Rowland, Inc., 449 Marietta St., N. W.
BIRMINGHAM 3, Ala., Birmingham Spring Service, Inc., 2017 Avenue B, South
CHICAGO 16, Ill., William and Harvey Rowland, Inc., 2732 Indiana Avenue
JACKSONVILLE 4, Fla., Jacksonville Spring & Alignment Co., 137 Jefferson St.
PHILADELPHIA 30, Pa., William and Harvey Rowland, Inc., 1414 Fairmount Ave.
PITTSBURGH 13, Pa., Point Spring Co., 419 Melwood Street

Rowland Springs provide mile after mile of extra service. They reduce premature breakage—down time—and maintenance costs. They are the product of progressive engineering which, through the years, has anticipated every need for cost-harrowed fleet operators.

Put Rowland Springs on the vehicles making the toughest runs on your schedule—have them inspected regularly by a Rowland Spring Distributor—and your cost records will prove more spring miles for less dollars. Write us for the name of our nearby distributor. William & Harvey Rowland, Inc., Frankford, Philadelphia 24, Pa.

CERTIFIED ALLOY STEEL ROWLAND SPRINGS Est. 1795

ROWLAND SPRINGS

LEAF • COIL • HELPER SPRINGS • UNIVERSAL JOINTS • WHEEL SUSPENSION PARTS

Wright Announces New Transmission

A new type of transmission, which will shift into any one of four forward speeds in one second, and which is readily adaptable to "push button" control, has been announced by the Wright Aeronautical Corp.

A unique feature of the transmission, the company states, is the fact that power is supplied to the drive wheels without interruption, even during shifting. The engine may be shifted under any condition of speed or load, without the temporary lag or loss of speed and power now encountered in each shift with a conventional transmission.

Known as a "screw shift" type, the Wright transmission has helical or spiral grooves cut in the main shaft which is the center of the mechanism. Action of the shift lever moves selector gears forward or backward along this spiral until they synchronize with the desired gear. In this way there is a constant torque or twisting force on the drive shaft and all shifting is done in a straight forward or reverse motion, unlike the conventional "H" type shift.

Simple in design, the new transmission has half as many parts as present automatic transmissions. In actual test shifts with a high power automobile engine, it has demonstrated high resistance to abuse by the driver.

The transmission may be used in busses, automobiles, trucks, marine installations, or stationary powerplants requiring quick changes in speed.

Wright engineers claim additional advantages for the transmission; the mechanism requires little or no adjustment for wear, it shifts more easily and automatically synchronizes gears before each shift, and it substantially reduces the tendency toward wheel spinning on ice or slippery roads.

REEFER TIPS FROM FRUEHAUF

The difference between theoretical and actual performance of insulated truck bodies may vary by as much as 50 per cent according to Verne M. Drew, research director of Fruehauf. Outside color is also important with a variation of 10 per cent in favor of light colors and unfinished stainless steel or aluminum in top position. "Weep Holes" should also be provided, according to Mr. Drew, to permit drainage of condensation from interior walls.

MULTIPLIES BRAKE EFFECTIVENESS

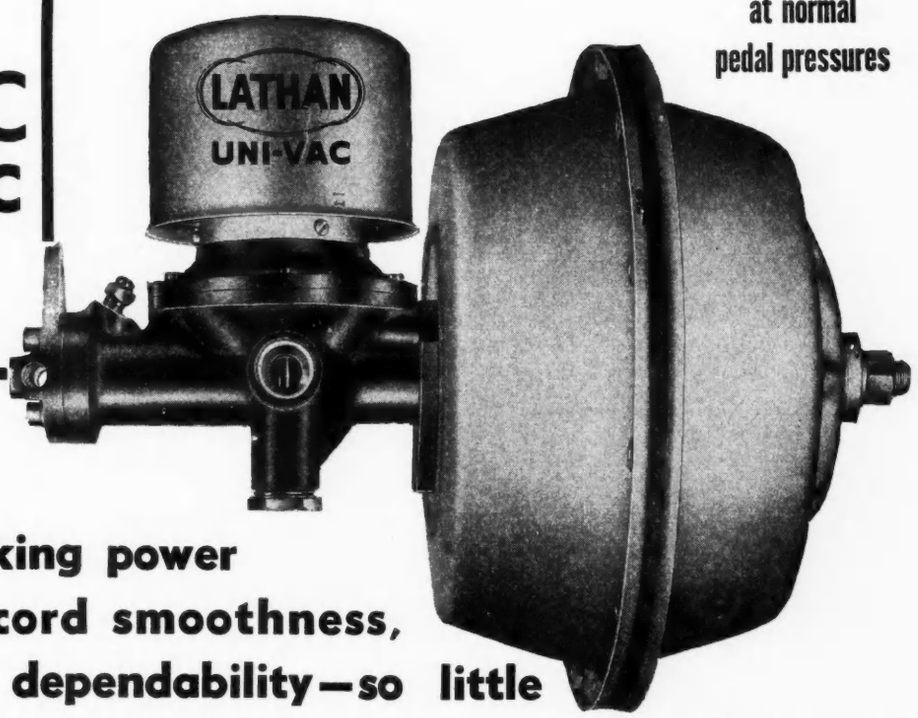
2½ TO 4 TIMES

at normal pedal pressures

★

LATHAN

UNI-VAC HYDRAULIC POWER UNIT



Maximum braking power applied with record smoothness, exactitude, and dependability—so little effort, driver fatigue is practically eliminated.

LATHAN UNI-VAC is a modern brake robot. The driver simply applies the foot brakes as usual, retains "feel" of the brake as usual, and application is in ratio to pedal movement as usual. UNI-VAC magically multiplies the braking power thus applied, increasing its effectiveness accordingly, and relieving the driver of physical strain. Amazingly simple, smooth, durable, and dependable. For trucks and truck-tractors. Quickly, easily installed at any convenient place on chassis. No lubrication, no adjustments—either during installation or any time thereafter. Get up to date. Get MODERN brake efficiency and economy. Get the facts on LATHAN UNI-VAC today.

When Control Counts

LATHAN

★

Write for UNI-VAC folder and complete LATHAN Power Brake Catalog today.

LATHAN CO., INC.
Subsidiary of
KELSEY-HAYES WHEEL CO.

East of Rockies:
KELSEY-HAYES WHEEL CO.
DETROIT 32, MICH.

West of Rockies:
LATHAN CO., INC.
SO. SAN FRANCISCO, CALIF.

VACUUM POWER BRAKE SYSTEM

A GOOD OIL FILTER
• Has high dirt-absorbing, oil-cleaning efficiency.
• Eliminates unnecessary wear and maintenance.
• Assures extra miles of lower cost operation.
ADDS "Maximum" TO ENGINE PERFORMANCE

Full-power engine performance is only possible when the lubricating job is done by oil that is thoroughly and consistently cleaned by a filter built for the job.

When engines are kept clean, gum and sludge formations have less chance to accumulate and mechanical overhauling is kept to a minimum. A good filter is directly responsible for s-t-r-e-t-c-h-i-n-g engine life, cutting replacements and reducing maintenance.

Michiana filters are made for Diesel, gas, and gasoline engines in capacities to 3266 H.P.

Depth type MICHIANA Filters have long proved their efficiency, at home and throughout the world, on all types of engines, trucks, buses, and motorized equipment. When it comes to *economy* in oil consumption and *efficiency* in oil cleaning there is no question of choice—it's MICHIANA.

Replacement of element or filtering material makes a MICHIANA Filter good as new. Write for Bulletin 839 to MICHIANA PRODUCTS CORPORATION, Michigan City, Ind.

MICHIANA OIL FILTERS

Write for Illustrated Bulletin 839.

CCJ Newscast

(CONTINUED FROM PAGE 88)

SAE ISSUES GAS TANK RECOMMENDATION & TESTS

A series of recommendations concerning strength and construction of side mounted gasoline tanks for truck tractors has been released by the Society of Automotive Engineers. Most interesting are the recommended "drop" tests which read as follows:

"The tank when filled with water equal in weight to that of its gasoline capacity, shall withstand without leakage, a drop from a clear height of 30 ft, falling so as to strike squarely on one corner on concrete or equal surface. The concrete or equal surface shall not rupture under the impact. The fill-pipe and cap, gasoline gage sending device, and the air intake and safety vents shall not leak more than 1 oz. per min. as a result of this test.

"The fill-pipe and tank must withstand without leakage a drop from a clear height of 10 ft., falling so as to strike squarely on the fill-pipe on a concrete or equal surface. The concrete or equal surface shall not rupture under the impact. The tank shall contain water equal in weight to its gasoline capacity during this test. The fill-cap shall not leak more than 1 oz. per min. after this test.

"Spillage or gasoline leakage shall not be at a rate greater than 1 oz. per min. with the full tank within 30 deg. of inverted position, at room temperature. The fill-pipe, cap, gasoline gage, air intake vent and safety vents shall withstand this test. Outlet pipe to be plugged for this test.

"The safety vent, or vents, shall limit the rise in internal pressure in the tank to a maximum of 50 psi when the tank is subjected to the following fire conditions:

"1. Tank filled to three-quarters of rated capacity with standard gasoline and placed in inverted position, with the gasoline feed outlet connection plugged.

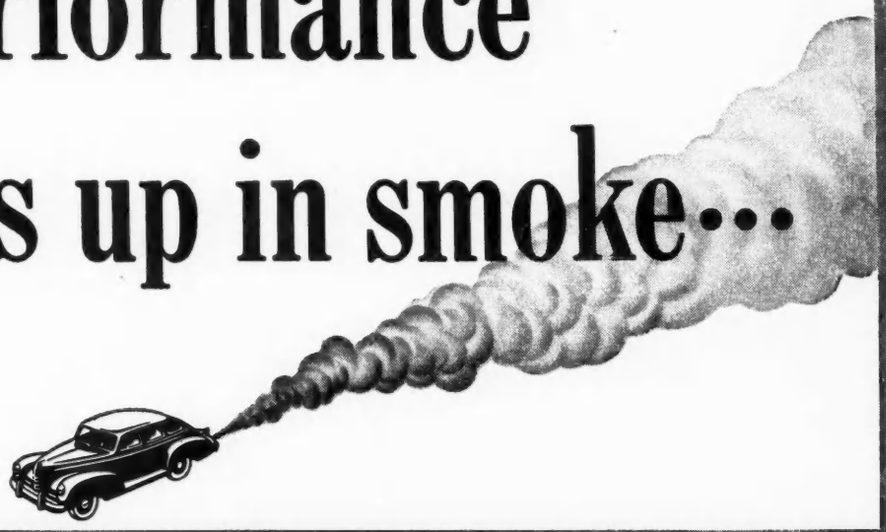
"2. An enveloping flame applied to the tank with sufficient intensity to produce an internal gasoline temperature rise of 6 to 8 F per min. starting from a gasoline temperature of 50 to 80 F.

"The tank and all appurtenances including fill-pipe, cap, gasoline gage, and air intake vent shall withstand an internal hydrostatic pressure without rupture of 150 per cent of the maximum pressure at which the safety vent releases in the fire test.

The recommendations also suggest that all tank seams be welded or soldered, that drain fittings do not extend beyond ¾ in. and be at least ⅜ in. in diameter, that feed line be from the top, that fill-pipe permits at least 20 gal. per min., that safety vents limit rise in internal pressure to a maximum of 50 p. s. i., that fill-pipe be outside the cab or body, that gravity or siphon feed not be used and that selector valves be furnished when two or more tanks are used.

(TURN TO PAGE 172, PLEASE)

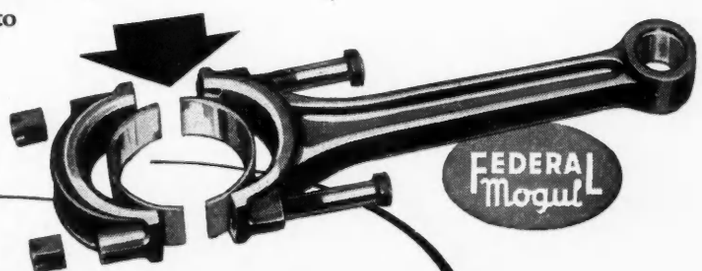
Performance goes up in smoke...



when worn connecting rod bearings cause oil pumping!

You get less mileage at higher cost when smoky exhaust shows oil pumping. Worn bearings hike operating costs because they let excess oil reach combustion chambers. It burns to fouling carbon on pistons, rings, valves and spark plugs. One badly worn bearing can oil-starve others, cause costly crankshaft damage. Check the bearings. If worn, replace in sets with genuine Federal-Mogul Oil-Control Bearings, to restore power, pep and economy.

FEDERAL-MOGUL SERVICE
DIVISION OF FEDERAL-MOGUL CORPORATION
COLDWATER, MICHIGAN



Replace in Sets with Genuine

FEDERAL-MOGUL

Oil-Control Bearings

ATA's Labor Relations Forum Recommends Contract Provisions for Grievances

Analyzing results of the American Trucking Associations' third labor relations forum, Benjamin R. Miller, director of the association's Industrial Relations Department has announced formulation of labor contract provisions which would set up machinery for efficient handling of grievances and disputes.

An analysis of current labor agreements was prepared by ATA and submitted to representatives of the industry at sessions held in Denver, Chicago and Washington. "There was general agreement," Miller declared, "that the majority of trucking industry contracts now in effect contain totally inadequate provisions to govern grievances and disputes. As a result of the discussions, there was unanimous agreement on a set of specific recommendations which are being submitted for the serious consideration of management and labor in the trucking industry."

The recommended provisions are as follows:

1. Every labor agreement in the trucking industry should contain clauses designed to resolve grievances and disputes arising out of conflicting interpretations or applications of any contract, with arbitration as the last resort.

2. Agreements should provide for four steps when a grievance arises. First step should include (a) informal attempt between the disgruntled employe and his immediate supervisor to settle the matter, and (b) reduction of the grievance to writing in the event of inability to arrive at a conclusion, such written statement to be signed by the employe and his union representative. Second step should be presentation of the written grievance to the management representative in charge of the division or terminal. Third step should be transmission to an authorized representative of top management in instances where a company has more than one terminal. Fourth step should be consideration of a dispute by a joint management-labor committee when the employer is subject to group negotiations; such committees could be on a citywide, statewide or regional basis as found desirable.

3. Where a joint grievance committee has begun to function, the contract should provide that management and labor each should have a single vote and decisions of the committee should be final; committee rules and of the committee should be final; committee rules and procedure should be established at the outset; decisions by the committee should not become precedents for the entire area of a contract but should deal with each case on the basis of the specific facts.

4. Contracts should provide stated time limits for presentation of grievances, rendering of decisions and filing of appeals.

5. Any party to the contract should be assured by the contract of the right to submit grievances.

6. Disputes not capable of settlement should be referred by the contract to an arbiter selected by mutual agreement of the parties and in the event of inability to agree on an arbiter the contract should provide for selection through some agency such as the American Arbitration or the U. S. Conciliation Service.

7. The contract should specify that when arbitration begins a stipulation of the facts in issue will be drawn up so as to prevent the arbitrator from overstepping his authority.

8. The arbiter should be forbidden to modify the contract.

9. The contract should specifically state that decisions of the arbiter are final and binding on either side in the dispute.

10. The contract should provide that cost of arbitration would be shared equally by both management and labor.

PUNCTURE-SEALING TUBE

United States Rubber Co. has resumed production of its puncture sealing inner tube which contains plastic rubber inside the crown to surround puncturing objects.

"I'll settle this little difference right now!"
Sideswiped!
For want of armor, the lamp was lost!
For want of a lamp, the truck was lost!
THE K-D LAMP DIVISION
NOMA ELECTRIC CORPORATION
Noma Building • 55 West 13th Street • New York 11, N. Y.
Factory: Cincinnati, Ohio
TAIL LAMPS
DIRECTIONAL SIGNALS
REFLECTOR FLARES
STOP LAMPS
FOG LAMPS

ICC Analyzes 1945 Truck Accidents

IN a report of motor carrier fire accidents during 1945, the Interstate Commerce Commission, Bureau of Motor Carriers, has analyzed 486 accidents involving fires which were reported to the Commission.

An attempt was made to correlate the casualties, personnel and property damage in fire accidents, with kinds of carriers, with the kinds of vehicles and cargoes, and with the geographical areas in which they occur.

Of the 486 accidents involving fire, 119 resulted in fatalities, 448 in personal injuries, and property damage of $3,009,369. There were 275 fire accidents which resulted in total loss or destruction of one or more of the vehicles involved, in which there was estimated property damage of $2,238,777. There were 304 vehicles of various kinds completely destroyed. More than 60 per cent of the vehicles involved were manufactured since 1940, and the preponderant remainder were manufactured between 1935 and 1940. About 25 per cent were made in 1941.

CASUALTIES RESULTANT FROM MOTOR VEHICLE FIRE ACCIDENTS IN 1945
(All Classes of Passenger- and Property-Carrying Carriers)

Type of Accident	No. of Accidents	No. of Fatalities	Fatalities Per Accident	No. of Injuries	Injuries Per Accident	Property Damage, Amount	Average Amount Per Accident
Collision	209	103	0.495	364	1.740	$1,530,722	$7450
Non-collision	44	15	0.340	44	1.000	$383,057	$8700
"Fire only"	233	1	0.004	40	0.172	$1,095,590	$4675
Total	486	119	0.224	448	0.925	$3,009,369	$6190

There was a very substantial decrease in the number of reported fire accidents in 1945 as compared with 1944. The Commission reports the figure at 8 per cent decrease. The number of injury accidents reported by all classes of carriers was substantially less than in 1944, while the number of injuries per accident was greater.

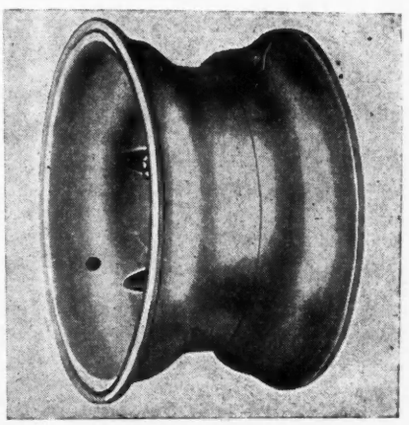
There was a decrease of about $150,000 in the property damage involved in fire accidents of Class I carriers, while the property damage per accident was about the same for both years. Class II and III carriers also showed a decrease of about $16,000, while the property damage per accident was somewhat greater in 1945 than in 1944. The number of fire accidents in which Class I carriers were involved was about eight times as great as the number in which Class II and III were involved.

The Commission makes the following recommendations with regard to improving

(TURN TO NEXT PAGE, PLEASE)

K-D Armored Clearance Marker Lamp makes the BIG difference!
K-D A541 Tough die cast housing protects the lamp and lens from glancing blows from tree branches, walls and other vehicles.
"Patented clip for quicker, easier bulb replacements!"
Single unit assembly especially popular with mechanics. Patented clips hold lens in housing when making bulb replacements. No more juggled parts. No more hunting for lost screws.
"Greater visibility, too!"
Anchored fibre gasket seals out dirt and moisture. Rubber pad between lamp and body absorbs vibration. "Fresnel" type "lighthouse" lens gives greater visibility. Socket plate held in place by four screws assures positive ground.
WE ALL AGREE
MECHANICS DRIVERS OPERATORS
K-D MAKES THE BEST ARMORED CLEARANCE MARKER LAMP
MECHANICS: "Easy to install, saves time and trouble."
DRIVERS: "Dependable, feel safer on the road."
OPERATORS: "Economical, saves mechanic's time, cuts down the accident rate."
WHEN YOU'VE GOT TO SEE... GET K-D!
MAKERS OF THE MOST COMPLETE LINE OF AUTOMOTIVE SAFETY PRODUCTS
CLEARANCE LAMPS
MIRRORS
TRIFLEX REFLECTORS
BACK-UP LAMPS
HEADLAMPS

Over-Size Tires and Rims



New 8-in. passenger car rim offered by The Waber Co., Chicago, for use with company's special lower-pressure over-sized tires and "double-seal" blow-out-proof inner tubes. According to company officials use of the double inner tube can substantially increase tire economy and actually reduces the tendency toward dynamic unbalance because centrifugal force tends to keep the uncured rubber under the tread

CCJ Newscast

(CONTINUED FROM PAGE 173)

conditions found in the study:

1. There should be a better inspection and maintenance system for motor vehicles as a step in reducing the number of accidents.

2. Special precautions should be taken with respect to tires, particularly as regards the dangers inherent in overloading and high speed operation, more particularly in the case of synthetic tires.

3. Drivers should be trained to protect the vehicle with proper signals or flares after an accident causing stoppage on the highways.

4. Vehicles should be equipped with better and more substantial fuel tanks. The relatively much greater severity of fire accidents in cases of fuel spillage indicates the need for the prevention of spillage by all practical means.

5. Since many of the fires originate in the cargo space, it is indicative of the need for better inspection of van type ladings before departure from terminals. Smoking should be prohibited by loaders where combustibles are concerned at least.

6. The degree of care in driver selection and training taken with regard to drivers of vehicles laden with hazardous ladings should continue to be stressed.

7. Drivers should strictly conform to the requirements in the hours of service regulations prescribed by the Commission's regulations as a step in decreasing the number of accidents involving running off the road. Extra duties such as loading and unloading should not now be required of drivers to the extent engaged in during the war. There should be a greater degree of responsibility on the part of operators to ascertain that drivers are in fit condition before they commence their duties.

8. Closer attention should be paid to the maintenance of parts of the exhaust system. and they should be inspected frequently to assure their gas-tightness.

DOLLARS-AND-SENSE SELLING

A trailer customer can prove for himself the cost-cutting advantages of stainless steel truck-trailers with a new "Trailer Savings Analysis" form developed by the Fruehauf Trailer Co.

Space is provided in the form for the customer to fill in his own figures comparing both potential revenue and body maintenance expense between a stainless steel van and any other type of unit.

The weight-saving of stainless steel as compared with conventional-type trailers ranges fro 825 lb. for a 28-ft. single-axle unit up to 1045 lb. for a 32-ft. tandem-axle model. In the analysis form space is provided for this extra payload capacity to be computed in terms of extra annual revenue.

The customer is invited to compare his average costs of body maintenance and painting per trailer with the average for stainless steel. A figure of $53.48 per year is used for the stainless steel trailer. based upon the 1946 average of body repair costs for 178 Fruehauf stainless steel trailers.

HOME TOWN NOTES

Fleet operators in the vicinity of the following cities will find these developments of note:

Altoona, Pa.: A new Trailmobile factory branch, equipped for all sales and service activities, located in near-by Hollidaysburg.

Charleston, W. Va.: A Fruehauf Trailer factory service branch in the recently completed Union Truck Terminal on Route 35, North Charleston. Wm. H. Hanks is in charge.

Chicago: Supercargo Sales & Service Co., 4642 S. Western Ave. has been named distributor for American Bantam Supercargo trailers. Matthew Alagna is general manager, and Joseph Daniels is in charge of service.

Minneapolis: George M. Katz of 722 S. Fourth St has been named sales representative for the Teleoptic Co.

Philadelphia: A new factory branch and warehouse for McQuay-Norris and King Quality Products at 3222 "H" Street. Complete machine shop service and substantial stocks are offered.

New York: Senreb Sales Co., 130 W. 42nd St. has been named sales representative for the Teleoptic Co.

Toledo: A new modern freight terminal for Geo. F. Alger Co. at 415 Second St.

(TURN TO PAGE 176, PIEASE)

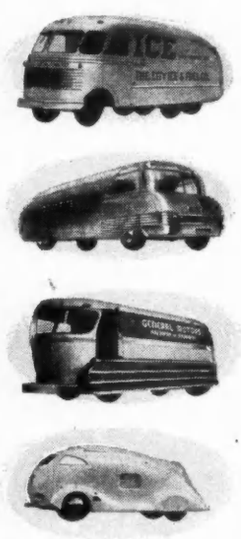
NO LIMITATIONS ON BODY DESIGN

When using HART Parts

Don't be stymied by special body design. Hart supplies all the parts to produce a job to your individual requirements. Hart Service also includes styling, body design, engineering, dies and tools.

Have your body builder tell us your problem. By using Hart Service he'll not only furnish what you need, but save you time and money too. And replacement parts will always be available at quick delivery!

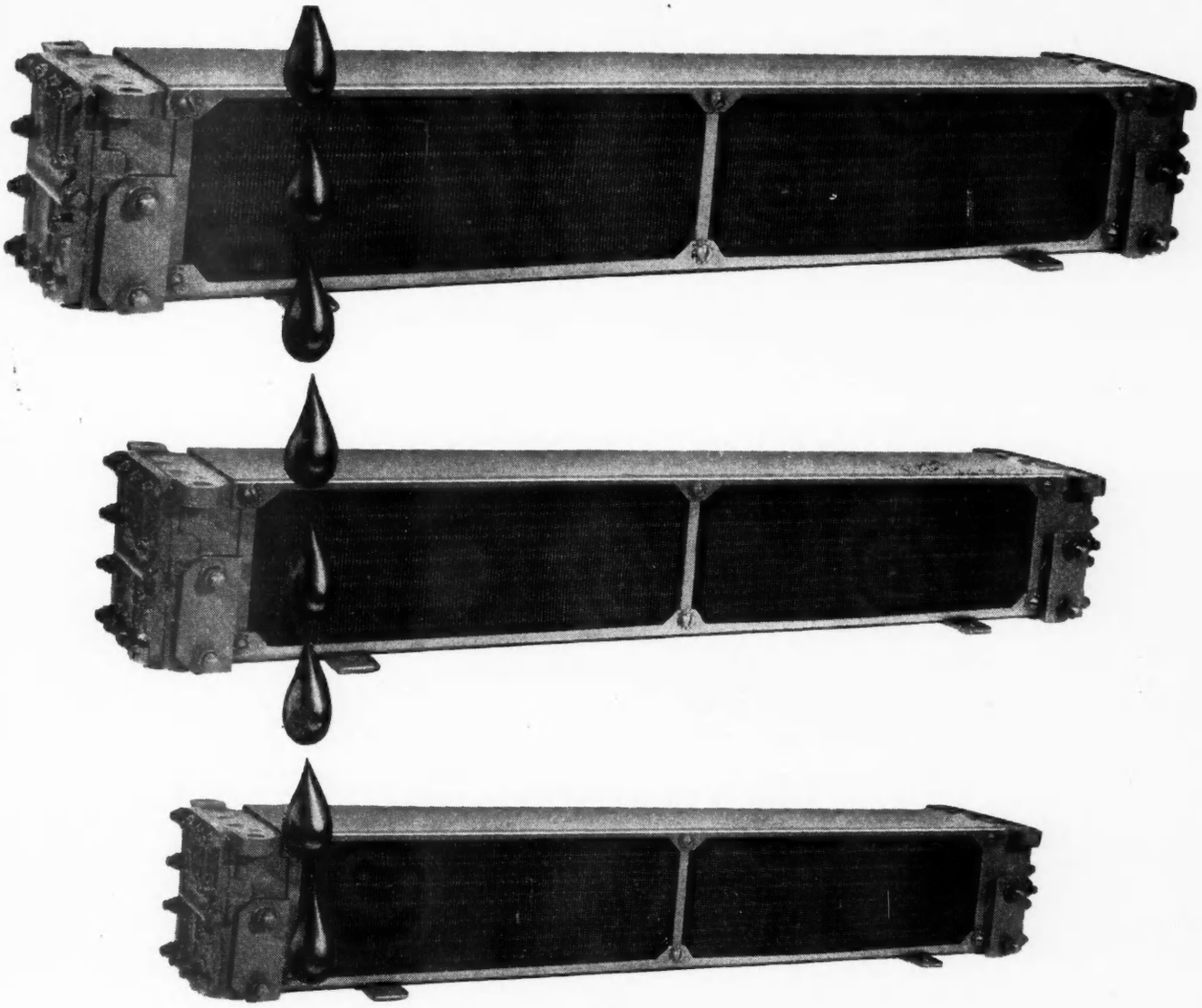
Write to Dept. 'C' for Catalog and description of Hart Service.



A Single Source for Body Sections and Panels

HART PRESSED STEEL CORPORATION

ELKHART, INDIANA



Efficient OIL COOLING

Special design and quality workmanship are combined in this better oil cooler for bus engines. An important maintenance advantage is the easily removable head for tube cleaning.

Oil coolers of this type are designed for each particular application and therefore are not a standardized product. They are manufactured only in production quantities for your particular oil cooling needs.

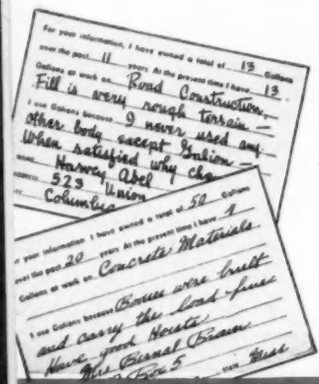
A PRODUCT OF B-W BORG-WARNER

LONG MANUFACTURING DIVISION
BORG-WARNER CORPORATION
Detroit 12, and Windsor, Ontario

LONG
CLUTCHES • RADIATORS • OIL COOLERS

For Over 25 Years

OPERATORS HAVE PRAISED GALION SERVICE



Truck owners vouch for Galions. They have depended upon them for many years, knowing that Galion design and construction always gives longer years of trouble-free service. Investigate Galion's record of efficiency and long life, and you too will specify the hoist that outlasts the chassis.

THE GALION *Allsteel* BODY CO.
Galion, Ohio

GALION *Allsteel*

HYDRAULIC HOISTS and BODIES MAKE BETTER DUMP TRUCKS

CCJ Newscast

(CONTINUED FROM PAGE 174)

PETERBILT OWNERSHIP CHANGE

Peterbilt Motors Co., Oakland, Cal., has just been purchased from the estate of the late T. A. Peterman, prominent Tacoma lumberman, who, with L. A. Lundstrom founded the concern on the assets of the Fageol Motors Co. Announcement of the purchase was made by L. A. Lundstrom, president and general manager of the concern, who stated that control of the company is now vested in the key operating personnel, all of whom have been associated with the concern since its founding in 1932. In addition to L. A. Lundstrom as president, officers include F. E. Matthews, vice-president and production manager; and W. M. Fanning, secretary and treasurer. Among the key operating personnel who are prominent in the new ownership are L. R. Scholl, sales manager; Al Ramos, parts and service manager; E. S. Ross, chief engineer, and O. D. McKinney, director of purchases.

Peterbilt specializes in the manufacture of heavy-duty trucks designed and engineered to specific requirements. Although steel sheets are still critically short, the company expects to double production during the current year.

NEW EATON DIVISIONS

...J. O. Eaton, chairman of the Board of Eaton Mfg. Co., Cleveland, has announced the forming of three new Michigan divisions of the company, replacing the former Wilcox-Rich Division: The Valve Division with plants in Battle Creek and Lawton manufactures automotive, aircraft, and diesel engine valves; the Pump Division at Marshall produces Eaton rotor pumps for various automotive, truck, tractor, and aircraft applications; the Saginaw Division produces hydraulic valve lifters, tappets, valve seat inserts, and dynamatic fan drives.

The forming of these new divisions coincides with the appointment of three new general managers. H. I. Dyer, has been made general manager in charge of the Valve Division. Herbert Russell, has been made general manager of the Saginaw Division. F. H. Mott, Jr., has been made general manager of the Pump Division.

NEW SALES DISTRIBUTORS

The Lubri-Gas Corp. has recently acquired the national sales and distribution of "Lubri-Gas" compound, product of the Lubri-Gas Laboratories, Chicago, Ill.

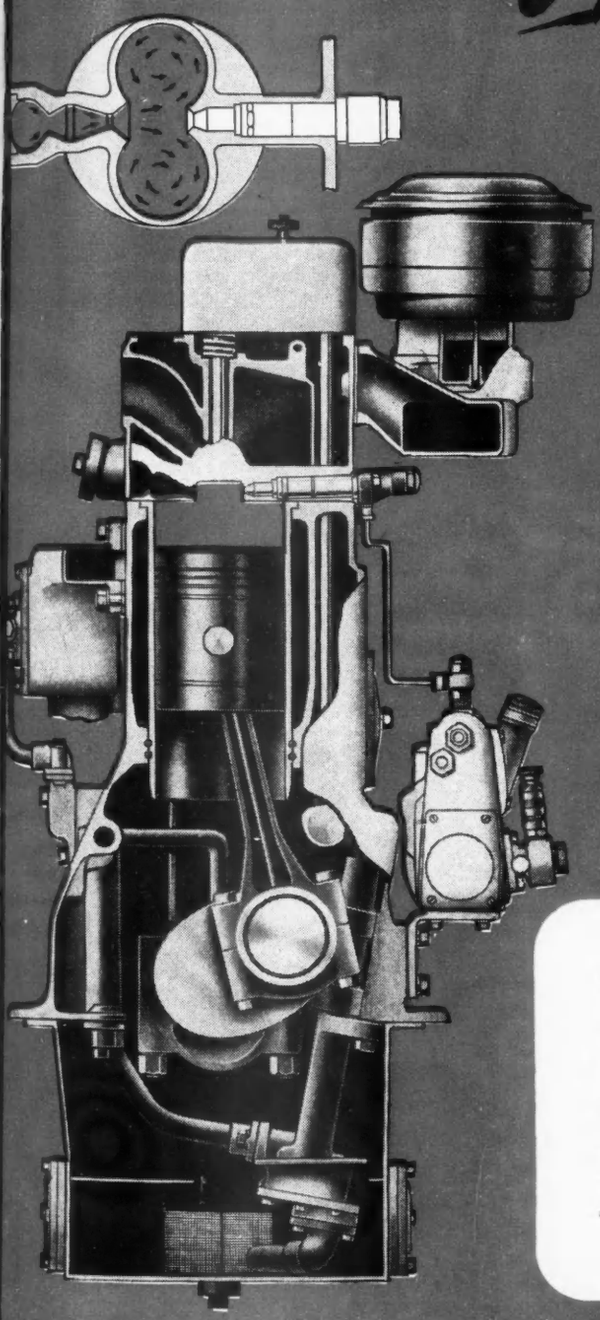
Officers of this new company are: R. N. Green, president; L. N. Pyle, vice-president; Ray Lawlor, treasurer; H. Quinn, secretary; and G. D. Anstine, general sales manager. Offices are located in the Fisher Building and at 6230 Second Ave., Detroit, Mich.

The Lubri-Gas Laboratories in the future will confine its operations to supplying the new Detroit concern with the basic chemicals used in the manufacture of the "Lubri-Gas" compound.

(TURN TO PAGE 178, PLEASE)

SERVICE

for the engines that Experience built...



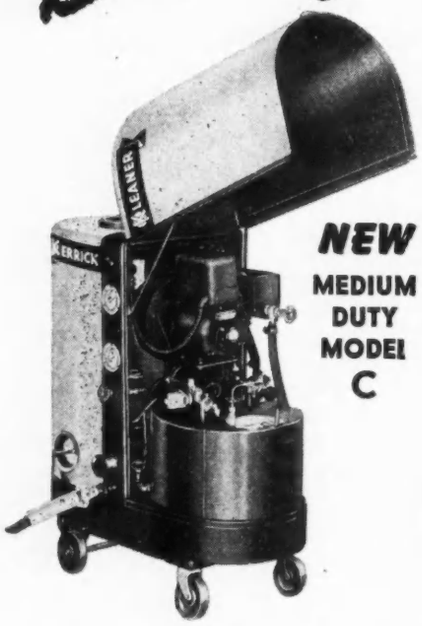
The responsibility of The Buda Company to the ultimate user does not end with the design, manufacture and shipment of powerful, economical, dependable engines, power units and generator sets for every industry. Since the first BUDA engine was built in 1910, it has been our constant policy to *keep BUDA power always on its toes, delivering more horsepower hours per dollar.* That is why factory-trained maintenance men have been placed near you . . . in your BUDA Distributor's office. These men are part of every BUDA engine you buy, so take advantage of their capable service.

BUDA Distributors are strategically located throughout the United States and Canada, as well as in all principal trade centers of the world. Their offices are staffed with experienced personnel well qualified to help you solve the most complex engine power problem . . . and to help keep BUDA engines on the job, year after year.

BUDA

15459 Commercial Avenue
HARVEY *(Chicago Suburb)* ILLINOIS

Ready for Delivery



NEW MEDIUM DUTY MODEL C

KERRICK KLEANER

FULL PRICE $437.50
NO EXTRAS TO BUY

Gas Fired, Stationary; Oil Fired, Portable

The greatest dollar value ever offered in a medium duty steam cleaning unit. Will out-perform other machines costing up to six hundred dollars.

Clayton Manufacturing Co.
El Monte, California
Please send full information on the new Model C Kerrick Kleaner:

Firm_____

Name_____

Address_____

City_____

State_____

SEND COUPON FOR FULL STORY

CCJ Newscast

(CONTINUED FROM PAGE 176)

WEST COAST REPRESENTATIVE

Manhattan Rubber Division of Raybestos-Manhattan, Inc., Passaic, N. J., has announced that Asbestos Company of California, 941 Sixteenth St., San Francisco, will represent the company in the San Francisco area.

The Asbestos Co. will carry a complete stock of belting, V-belts, hose of all types and other industrial rubber products.

New offices and warehouse facilities for Raybestos-Manhattan, Inc., have been occupied at 131 Mission St., San Francisco 5, the company has announced.

The new quarters will provide adequate space for a large stock of belting, hose, other industrial rubber products, and packings, to efficiently serve West Coast customers.

REORGANIZES SALES

To meet a sharp increase in demand among many trades and industries for its Eutectic Weldrods and Electrodes, the Eutectic Welding Alloys Corp. of New York City has recently inaugurated a policy of local distribution.

Authorized distributors are being appointed to handle this line of welding rods and fluxes. Territories are open for established supply dealers each of whom, according to the manufacturers, will receive the assistance of one of the company's local field engineers in merchandising the line and in handling tough consumer problems. This policy, it is stated, should serve to maintain dealer sales at a consistently high level.

SAN FRANCISCO BRANCH

The J. T. Jenkins Co., Kenworth distributors in California, Arizona, Nevada and New Mexico, recently opened new Northern California headquarters at 1140 Folsom St. in San Francisco. The repair shop in the new $275,000 building occupies more than 9200 sq. ft. and is completely equipped to handle every type job from brake relining to the complete rebuilding of a wrecked truck.

The new branch is prepared to help truck and bus operators cut down vehicle out-of-service time by furnishing essential parts on an "exchange" basis. The service covers such units as the main and auxiliary transmission, starter, generator, fuel pump, cylinder head, and similar items.

W. A. BARBER DIES

William A. Barber, 63, treasurer of Chilton Co., Philadelphia, publishers of COMMERCIAL CAR JOURNAL, and other business papers, died at his home on July 20, in Bala-Cynwyd, Pa.

Mr. Barber, a native of Onarga, Ill., was formerly professor of economics at New York University from which he was a graduate. He was an executive of the Lee Higginson Corp., New York and Boston brokerage firm, before joining Chilton Co., in 1932.

(TURN TO PAGE 254, PLEASE)

BETTER than Ever Before

for SAFETY
REFLECTORS • LAMPS • FLARES
GROTE
GROTE Manufacturing Company, Inc. Bellevue, Ky.
Automotive Sales Office: Moorestown, N. J.

1917 – 1947
HIGHWAY TRAILERS
30th Anniversary
HIGHWAY TRAILER COMPANY
General Offices: Edgerton, Wisconsin
Factories: Edgerton and Stoughton, Wisconsin
Commercial Truck Trailers • Earth Boring Machines
Winches and other Public Utility Equipment

IDENTIFY TIRES

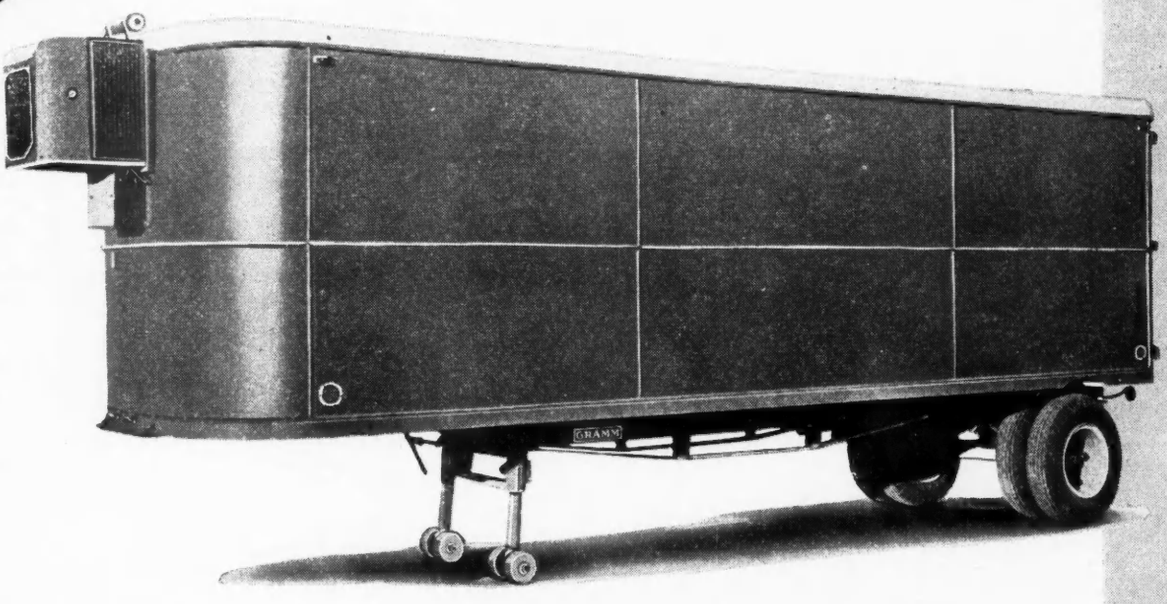
BRANDING
Quick and Easy!
Code Records Give Data on Tires.
WRITE FOR FOLDER
KEEL & CO., Inc., Phila. 44, Pa.

America's Leading HEAVY-DUTY TRUCK Manufacturers Standardize on LIPE CLUTCHES

★ for more miles between teardowns!
★ for less wear and tear on the truck!
★ for easier maintenance and replacement!
LIPE-ROLLWAY CORP.
SYRACUSE, N. Y.

To KEEP AHEAD IN A PROFITABLE FIELD

GRAMM TRAILERS



Rely on GRAMM Reefers

In the specialized perishables transport business, GRAMM refrigerated trailers are becoming more and more popular among leading operators. For dependable service . . . low upkeep cost . . . easy pulling and handling . . . and temperature control, operators are learning that GRAMM cannot be beat. GRAMM reefers are available in all popular lengths, with single or tandem axles, and with choice of any make forced air or refrigeration units. All bodies are completely, precision insulated with finest materials. You'll find you can keep ahead and earn consistent cool profits by specifying GRAMM for your new refrigerated equipment.

GRAMM TRAILER CORPORATION
Delphos, Ohio

GRAMM
A NAME FAMOUS FOR HIGHEST QUALITY IN TRANSPORT EQUIPMENT

SOLD BY LEADING INDEPENDENT DISTRIBUTORS AND DEALERS

New Assortments by Eis—
for easier and better brake service
Hydraulic Brake HOSES
BRAKE PARTS
BRAKE SHOE PARTS
HYDRAULIC BRAKE REPAIR KITS
A NEW set-up that gives you the complete Eis line of Replacement Brake Parts in assortments to meet your requirements. All assortments contain 1946-47 parts.
Eis skilfully designed merchandisers combine high eye-appeal with an improved marking system on boxes, for easy stock finding. A number of parts in the Eis Line have been refined and improved, for better and longer service. Today, as in the past, Eis Products represent the most advanced ideas in the field of replacement brake parts.
From your jobber.
THE EIS AUTOMOTIVE CORP., MIDDLETOWN, CONN.
BRAKE PARTS
BRAKE FLUID
BRAKE CABLES
BRAKE TOOLS
THE LINE OF DEPENDABLE SERVICE
THE EIS AUTOMOTIVE CORP

CCJ Newscast

(CONTINUED FROM PAGE 178)

SAFETY AWARD WINNERS

Raymond J. Custard, employed by the Denver-Chicago Trucking Co. of Denver, won the top place award in the inter-city truck division of the National Safety Council contest by driving 97,495 miles without an accident. The contest ran from March 1, 1946, to March 1, 1947, and awards were based on the largest number of accident-free miles in each category.

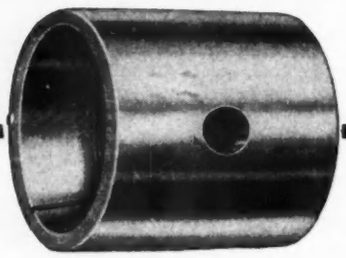
Winner of the city truck division was Glenn Barton, of Dolly Madison Cakes, (Division of Interstate Bakeries) with a record of 23,660 miles.

SAFETY CONTEST AWARDS

Awards for the 12th annual National Truck Safety Contest sponsored by The Electric Auto-Lite Co. and the American Trucking Associations, Inc., will include all-metal overnight cases as first prize and new glass fishing rods and reels for second place awards.

The '47-'48 contest gets under way Aug. 1, with entry blanks available now from ATA, State Motor Associations or from The Electric Auto-Lite Co. The awards will be made at the annual meeting of the ATA, but contestants need not be members. Classes are established for both local and long distance operations.

(TURN TO PAGE 256, PLEASE)



Announcing a New Line of

"PERFECT BUSHINGS"

CON ROD AND PISTON PIN

(SPLIT AND SOLID TYPES)

DO NOT confuse "Perfect" Split Type Bushings with ordinary types. These bushings are all-bronze, titeseam, of exceptional strength and durability. Made to the highest precision standards for replacement. Identical with factory equipment.

NOTE THESE THREE ADVANTAGES

1—Easier to ream because ream stock is reduced to a minimum.
2—Tailor made for easy application.
3—They save valuable time in fitting. When you save time you save money.

IMMEDIATE DELIVERIES

From your jobber or write us for full particulars.

PERFECT PARTS, INC.

55 Amsterdam Ave., New York 23, N. Y.

THE STUR-DEE is the world's most widely used grill guard because it does the best job of protecting the grill, radiator, fenders, headlights, etc. Used with complete success by thousands of truck owners, including many of the country's largest fleet operators. Easy to install. Write for descriptive bulletin.

VOLTZ BROTHERS, INC.

Serving Owners of Delivery Vehicles Since 1869

2520 South Indiana Ave., Chicago 16, Ill.

Raytheon 2-Way Mobile Radio-Telephone

Keeps your business moving

• no time lost • no miles lost • no business lost

The key to mobile fleet operating economy is 2-way, *instant* radio-telephone communication. And the low-cost, compact, trouble-free Raytheon Mobile Radiophone is paving the way to more efficiency and more profits for fleet owners.

Here's how it works: See the driver illustrated there in the transport truck? He's miles away from his company's central office. After he started out there came a cancellation of a delivery and several new requests for pick-ups.

Using Raytheon 2-Way Radiophone, the central office dispatcher is "in touch" with the driver the moment orders change. Thus schedules are altered as conditions warrant. The driver need not double back on his route. Unproductive stops are eliminated.

But these are only a few of the advantages. In emergencies, the driver is able to call immediately for help on tire changes or highway repairs. Or if he is hauling valuable cargo, he can report in at stated intervals to the dispatcher.

Operators of trucks, buses, patrol cars, taxicabs and service cars are finding that 2-way radio-telephone is the streamlined way to greater economy. Business is kept on the move. And they've learned that the Raytheon Radiophone—thoroughly tested and proved in *actual* service—is skillfully engineered and built to exacting specifications. Why not learn about its advantages today? *Write or wire for full details:*

★ *Driver for the Willett Company truck fleet in Chicago talks to central office dispatcher.*

★ *New installation of Raytheon 2-Way Radiophone equipment gives Willett Company dispatcher instant control over entire fleet.*

BELMONT RADIO CORPORATION

A Subsidiary of Raytheon Manufacturing Company

5921 W. Dickens Ave., Chicago 39, Illinois

RAYTHEON

★ SIMPLIFIED INSTALLATION

★ NOISE-FREE RECEPTION

★ LOW COST

★ LOW MAINTENANCE

★ NO DIALING

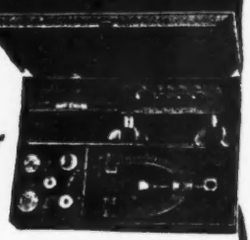
★ OUT OF SIGHT— OUT OF THE WAY

★ LONG LIFE

★ ONLY 6" × 6½" × 15"

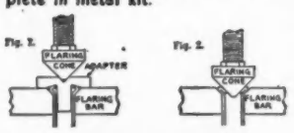
IMPERIAL
Double-Flaring Tool

. . . for steel and other metal tubing



● Ideal for brake, gas and oil line work. Overcomes tendency of welded steel tubing to crack when flared with ordinary flaring tool. First, tubing is belled, Fig. 1. Then flared in conventional manner, Fig. 2.

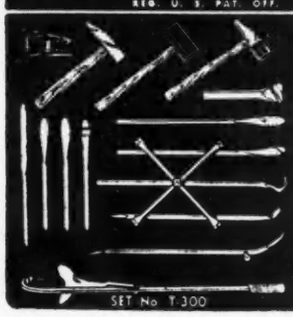
No. 93-FB Double-Flaring Tool complete in metal kit.



Order From Your Jobber

THE IMPERIAL BRASS MFG. CO.
1209 W. Harrison St., Chicago 7, Ill.

KEN TIRE TOOLS
REG. U. S. PAT. OFF.



LEAD THE FIELD
•
ADVANCED DESIGN
•
QUALITY UNSURPASSED
•
SEE YOUR LOCAL JOBBER OR WRITE FOR LITERATURE
•
KEN TOOL MFG. CO.
AKRON 3, OHIO

CLIX ENGINE PROTECTION

Pressure Clix
- Signal device for lost oil pressure—lost air pressure in braking system on gasoline and Diesel engines.

Thermo Clix
- Instant alarming device when temperature of the engine reaches the danger point.

Write for descriptive folder today!

THE NASON CO.
7663 Epworth Blvd. Detroit 4, Mich.

CCJ Newscast

(CONTINUED FROM PAGE 254)

CHEVROLET STUDIES FLEET SALES

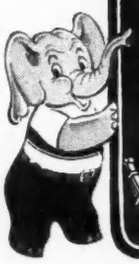
Meetings with dealers and fleetmen in 10 key cities throughout the country have just been concluded by E. P. Feely, newly-appointed manager of Chevrolet's fleet sales department. Purpose of these meetings was to gain first-hand reaction to Chevrolet policies and to receive suggestions which, according to Mr. Feely, will be put to use to improve Chevrolet's fleet sales set-up.

SAFFREN JOINS SOLRUN

Solrun Services, Inc., announce the appointment of Henry M. Saffren, former Captain of the AAF as technical director. A graduate chemical engineer, Saffren's experiences in the AAF have been highly specialized; he installed and directed a laboratory and pilot plant to determine the best suitable methods, equipment and materials required to conveyorize aircraft engine disassembly, cleaning and inspection at overhaul. In addition, he super-

(TURN TO PAGE 258, PLEASE)

MAREMONT HAS WHAT IT TAKES



MUFFLERS—TAILPIPES
ALLOY STEEL SPRINGS

MAREMONT AUTOMOTIVE PRODUCTS, INC.
So. Ashland at 16th St.
Chicago 8, Illinois

INVESTIGATE
Quixign Lettering Method Now!

Your fleet can be rolling billboards . . . Have enough EYE APPEAL to advertise, sell and deliver your products or service daily wherever they go.

Use . . . Quixign Plain or Adhesive Coated Stencil Paper. Quixign Ready-to-apply Masked Stencils. Quixign Quality Enamels or Lacquers.

A complete detailed folder has been prepared, giving step-by-step instructions. Write today for full particulars.

ASHLEY QUIXIGN COMPANY
15330 Idaho Ave. Detroit 3, Mich.

NEW LOW COST
DRILL GRINDER

Anyone can do expert drill grinding with this simple-to-use drill grinding attachment—fits on any bench grinder—saves buying new twist drills—saves time and materials that dull bits waste. Grinds bits from 3/16 to 1¼.

WRITE for FREE literature.

T & H MFG. CO.
811-N East 31st K. C., Mo.

ARROW SAFETY DEVICE CO.
MOUNT HOLLY, N. J.

Why wish for Ward LaFrance quality when you can get a Ward LaFrance truck as quickly as you can say Ward LaFrance—well, almost!

See your dealer or write for illustrated bulletins with specifications and body builder's chart.

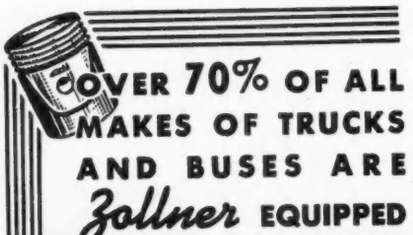
WARD LAFRANCE TRUCK DIV., Elmira, N.Y.

Better—but *not* more expensive!

SHULER AXLES

SHULER AXLE CO.
LOUISVILLE, KY.

SALESMEN
Experienced Fleet Men
DIRECT TO USER SALES
Oil Filter Elements
REFILL FILTER CO.
120 Rhode Island Ave.
East Orange, N. J.



OVER 70% OF ALL MAKES OF TRUCKS AND BUSES ARE *Zollner* EQUIPPED

ZOLLNER
HEAVY DUTY PISTONS
ZOLLNER MACHINE WORKS . . . . . FORT WAYNE, IND.

To form a

MORE PERFECT UNION !

USE PURITAN GASKA-SEALS No. 1, 2 and 3

USED THE WORLD OVER

EXCELLENT
IS THE
WORD FOR
PERFECTION
BODY and HOIST
REPUTATION

Write for name of nearest Perfection Distributor

THE PERFECTION STEEL BODY COMPANY
Galion, Ohio

PERFECTION
STAKE and DUMP BODIES
HYDRAULIC HOISTS

FOR ANY TRUCK
STANDARD or SPECIAL UNITS
IN ALL SIZES • FOR ANY USE

Another Assignment in

TAKING POWER AROUND CORNERS

for BLOOD-BROTHERS
Universal Joints

When automotive designers, builders and users must "take power around corners," they turn to Blood-Brothers Universal Joints because we supply more than a product.

High quality is traditional at Blood-Brothers. Our production facilities and our engineering experience are founded on a 40-year record of continuous service to the automotive field. From test field to production line, we are well-equipped—in men and machines—to "take power around corners" for you.

Write for complete engineering data on Blood-Brothers Universal Joints and the facilities which have earned the confidence and respect of the automotive field.

Typical "N" Series Needle Bearing Universal Joint —Statically and Dynamically Balanced for High Speeds

Universal Joints

BLOOD-BROTHERS MACHINE CO.
ALLEGAN, MICHIGAN
Division of Standard Steel Spring Co.

Cal-Van
GARAGE TOOLS
2 and 3 FINGER TYPE
CARBON SCRAPER
LIGHT BULB PLIERS
RING COMPRESSORS
CREEPER CASTERS
BUSHING REMOVERS
REAMERS
GEAR PULLER
THREE-IN-ONE PULLER
WRITE FOR CATALOG
NO. 10 TIMING GEAR PULLER
Cal-Van MACHINE PRODUCTS INC.
JACKSON, MICHIGAN U.S.A.

HOLLAND
Improved Landing Gear
Load Lifting power unequalled by any other type. 6" more ground clearance than other types. Fast, easy operation.
SAFE — SIMPLE DURABLE
HOLLAND HITCH COMPANY
HOLLAND, MICHIGAN, U.S.A.

Water Pumps
for
FORD — OLDSMOBILE
DODGE — CHEVROLET
PLYMOUTH — BUICK
Wohlert CORPORATION
LANSING, 5, MICHIGAN

CCJ Newscast

(CONTINUED FROM PAGE 256)

vised the installation and operation of these systems at all the major overhaul depots in the United States. At Solrun, Saffren will supervise research and field service in all types of chemical processing related to engine overhaul and maintenance.

WAA REVISES SURPLUS SALES

Disposal by Dec. 31, 1947 of all present inventories of automotive parts, totaling about $158,000,000 is the goal of a new disposal procedure launched by the War Assets Administration. Regional offices are authorized for the first time to offer all parts except engines for bid sales to non-priority groups on equal basis. Engines must still be offered to priority groups at fixed prices before being placed on bid sales.

WAA has also announced that a $7 to $8 million stock of surplus paints is being offered at low fixed prices, and that automotive service kits, originally costing $323.25 are being offered in single lots for $78.50. The kits include a gasoline-powered portable grease dispenser, a hydraulic tire spreader, a truck tire vulcanizer and a tire chain tool.

FARMERS OWN 1/3 OF TRUCKS

Readers may find it surprising to note that nearly 1½ million trucks or 30 per cent of all trucks in the U. S., excluding publicly-owned vehicles, are owned by farmers according to a 1945 census (just released) by the Public Roads Administration.

(TURN TO PAGE 260, PLEASE)

FOR ENGINE BEARINGS
CLUTCH PLATES AND PARTS
CHASSIS PARTS
Monmouth TRADE MARK is the name

SPINNING POWER
-a Companion Product of Full-Spark Plugs
GLOBE-UNION INC.
MILWAUKEE 1, WIS.

ROSSAUL #23 PAINT REMOVER
Non-Inflammable — Water Soluble
- Highly effective in removing paint, varnish, enamel and lacquer.
- Water rinse stops action — protects surface crevices and rivets against future activity.
- Easy to use—brush-on or spray.
- Conforms to most exacting trade specifications and requirements.

ROSSAUL COMPANY
119 West 63rd St., New York City 23, N. Y.

Complete SPRING SUSPENSION PARTS
HEAT TREATED ELECTRICALLY
MOOG INDUSTRIES INC.
ST. LOUIS, MO.

KINNEAR Rolling Doors

On truck bodies or buildings, Kinnear Doors are efficient, dependable, economical. Steel-slat curtain coils upward, out of way. Any size; motor operation if desired. Write for details.
THE Kinnear Manufacturing Company
2100-20 Fields Avenue, Columbus 16, Ohio

FRINK SNO-PLOWS
REG. U.S. PAT. OFF.
Both "V" TYPE and ONE WAY BLADE TYPE
hand or power hydraulic control
FOR ALL MOTOR TRUCKS FROM 1½ to 10 TONS
CARL H. FRINK, Mfr., CLAYTON, 1000 Isl., N. Y.
DAVENPORT-BESLER CORP., DAVENPORT, IOWA
FRINK SNO-PLOWS OF CAN. Ltd., TORONTO, ONT.

NO LOST ENGINE POWER
UP TO GOVERNED SPEED
HOOF FULL POWER GOVERNORS
SEND FOR FREE BOOKLET
HOOF PRODUCTS COMPANY
6543 SO. LARAMIE AVENUE, CHICAGO 38, ILL.

MORE THAN STRAINS
Actually Cleanses Oil!
DELUXE
MORE THAN FILTERS
Oil Filters
DE LUXE PRODUCTS CORP., LA PORTE, IND.

BROQUINDA *makes* Transport Refrigeration

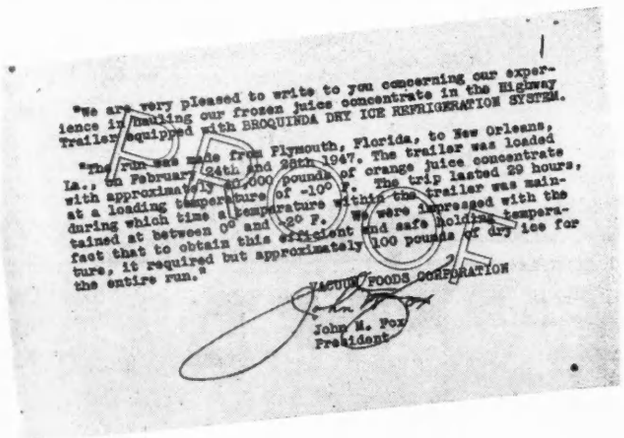
DRY ICE
Is Absolutely Reliable
BROQUINDA
Controls the Temperature

NEW improved Broquinda Dry Ice System of Refrigeration meets all transport refrigeration requirements.

NOW you can have the absolute reliability of Dry Ice maintaining constant, controlled temperature.

AMAZING simplicity of Broquinda's controlled Dry Ice System insures trouble-free operation . . . there are no mechanical moving parts!

PROOF of Broquinda's reliable constant temperature lies in the testimonials of Broquinda users:



"We are very pleased to write to you concerning our experience in hauling our frozen juice concentrate in the Highway Trailer equipped with BROQUINDA DRY ICE REFRIGERATION SYSTEM.

"The run was made from Plymouth, Florida, to New Orleans, La., on February 24th and 28th 1947. The trailer was loaded with approximately 20,000 pounds of orange juice concentrate at a loading temperature of -10° F. The trip lasted 29 hours, during which time a temperature within the trailer was maintained at between 0° and -20° F. We were impressed with the fact that to obtain this efficient and safe holding temperature, it required but approximately 100 pounds of dry ice for the entire run."

VACUUM FOODS CORPORATION

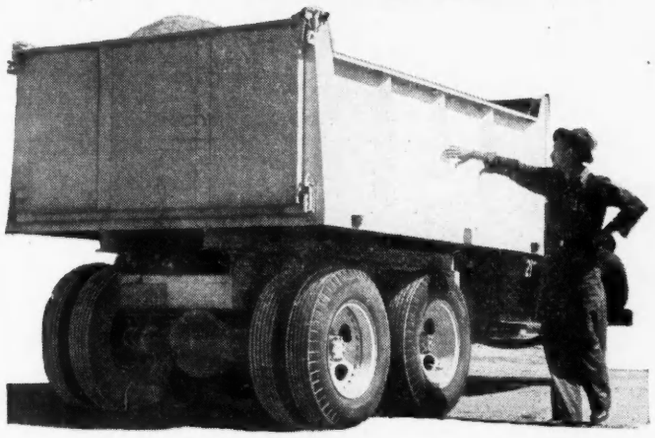
John M. Fox
President

ANY BODY—Type, Style or Size

Broquinda manufactures not only the refrigeration system to suit your needs, but can produce the bodies to meet your specifications. Truck, trailer, airplane, railroad, milk tank . . . or whatever your refrigerated or insulated body problems are, Broquinda can help you solve them. Write, wire or phone for further information.

BROQUINDA CORPORATION
Phone: *2181
St. Petersburg, Florida

I DOUBLED my truck's earning power



with a

DETROIT AUTOMOTIVE

Thornton Drive

"Yes, sir! I really hit a gold mine when I put Thornton 4-Rear Wheel Drive on my medium truck! That Thornton Drive has made my medium truck into a heavy hauler—a powerful, high capacity, rugged 6-wheeler. It has doubled my profits by doubling my payloads and increasing my performance by nearly 100%—yet I still have the operating economy and advantages of a medium truck!

"Figure it out yourself. My medium truck had a G. V. W. of 14,000 pounds. When equipped with a Thornton Drive, that same truck has a gross of 30,000 pounds. This additional equipment increased my body and chassis weight by only 78%. Therefore, the payload was more than doubled.

"And performance? My Thornton Drive, using 3 NoSPIN Differentials*, gives me *two* driving axles, *four* driving wheels—each with powerful, positive, independent drive. With that increased traction plus the Thornton Drive's rugged walking beam springs, I can *get out* of mighty tough places—do jobs I'd never attempt otherwise. My performance is 100% better both on the road and on those rugged off-the-road jobs.

"Yes, sir—any trucker can hit the profit jackpot—*double his earning power*—by converting his medium equipment to heavy capacity, high performance trucks with Thornton 4-Wheel Drive!"

DETROIT AUTOMOTIVE

***NoSPIN Differential Is a Profit Saver!**

NoSPIN is standard equipment in the 2-speed gear case of the Thornton Drive, providing positive drive to both rear axles and eliminating axle fight over any terrain.

When NoSPINs are also used in both driving axles (optional), positive drive is provided to *all four* rear wheels.

NoSPIN Differentials are also available for single axle trucks.

DETROIT AUTOMOTIVE PRODUCTS CORPORATION

(Formerly Thornton Tandem Co.)

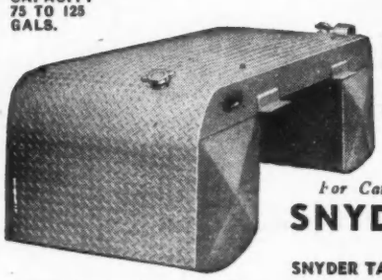
8701 Grinnell Ave. • Detroit 13, Michigan

SOLD BY TRUCK DEALERS EVERYWHERE

SNYDER — THE TANK THAT MADE TRUCK OPERATION SAFE & PROFITABLE

MAXIMUM FIRE HAZARD PROTECTION — LESS REFUELING, FASTER, LONG SERVICE RUNS

SNYDER SADDLE TANK CAPACITY 75 TO 125 GALS.

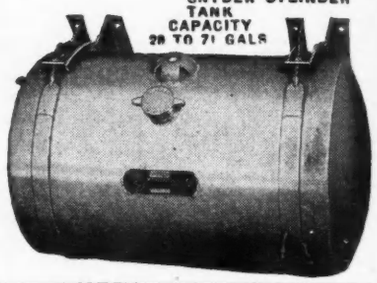


SNYDER SAFETY TANKS

were born when Truck Transportation struggled as an infant industry. SNYDER progressive engineering research continually uncovering exclusive improvements (patents No. 218-1772—2273737 others pending) leads Truck Transportation into BIG BUSINESS, improvements available only in SNYDER SAFETY TANKS . . . U. L. approved.

WHEN YOU BUY A TANK—BUY A SNYDER TANK— AND YOU BUY THE BEST.

SNYDER CYLINDER TANK CAPACITY 28 TO 71 GALS



For Catalog and Address of Your Nearest Distributor, Write:

SNYDER TANK CORPORATION

P. O. Box 14, Buffalo 5, N. Y.

SNYDER TANK CORPORATION P. O. Box 2390, Birmingham, Ala.

PREFERRED FOR REPLACEMENT

SKF

BEARINGS

HARD FACED VALVES

Your used valves rebuilt for better performance and economy.

LONGER SERVICE OVER UNPROTECTED VALVES

Prompt, Personalized Service

EXHAUST • INTAKE • SODIUM-COOLED
GASOLINE • DIESEL

CLEVELAND HARD FACING, INCORPORATED
2177 W. 28th St., Dept. A., Cleveland 13, Ohio.
Please send information and price list.

NAME .....

STREET .....

CITY ..... STATE.....

CCJ Newscast

(CONTINUED FROM PAGE 258)

RED STAR GETS CALDWELL RIGHTS

The Red Star Transit Co., Inc., has acquired the common carrier rights of the Caldwell Motor Freight Co. between Detroit and Chicago and intermediate points with interstate service. Red Star has added about 50 new units to its fleet of 500 to carry on the expended service, J. H. Minnich, president, announced.

HIGHWAY TAXES $1.6 BILLION

Special state highway users taxes reached an all-time high in 1946 totaling $1,616,000,000, according to the National Highway Users Conference. This figure was up 29.1 per cent over the 1945 figure and 11.2 per cent over the previous high in 1941. From the same source comes information that a total of $2½ billion has been diverted from highway revenues since 1925, despite the fact that 19 states now have anti-diversion amendments.

(TURN TO PAGE 262, PLEASE)

AMERICAN BOSCH

AUTOMOTIVE & AVIATION ELECTRICAL PRODUCTS

FUEL INJECTION EQUIPMENT

American Bosch Corporation
Springfield, Mass.

UNITS AVAILABLE

GRICO

2-AXLE DRIVE

19842 W. Eight Mile Rd.
Detroit 19, Michigan

KEEP YOUR VEHICLES MOVING ECONOMICALLY

with

HALL VALVE SERVICING EQUIPMENT

Ask Your Jobber or write

THE HALL MFG. COMPANY

TOLEDO 7, OHIO

Available Trucks

1½ TO 20 TONS

TRUCKS • TRACTORS
TRAILERS • BUSES

(SINCE 1910)

TELEPHONE—BRUNSWICK 1100

AVAILABLE TRUCK CO.

2501 ELSTON AVE.—CHICAGO 47, ILL.

DECALS

for FLEET MARKING

Costs less than hand lettering. Does not tie up equipment.

Quantities — 50 pieces or more any size.

Can reproduce any art work.

Prompt Delivery

EXCELLO SPECIALTY CO.

4101 East 100 St. Cleveland 5, Ohio

• RUGER •

Hydraulic

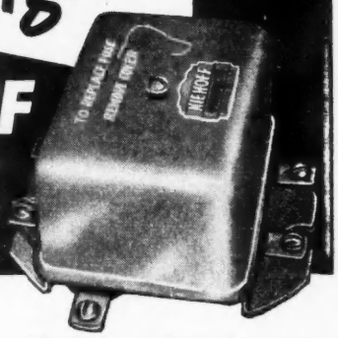
FLOOR CRANES

•

RUGER EQUIPMENT CO., Inc.

408 Leader Bldg. Cleveland 14, Ohio • P. O. Box 3821 Portland 8, Ore.

Step Up Lights with NIEHOFF HEADLIGHT RELAY. . .



Single or Dual Units Available

The NIEHOFF Headlight Relay increases headlight intensity as much as 50% because it reroutes the current over a much shorter path from battery to light. It reduces resistance in the circuit to a minimum. It overcomes poor results due to bad connections or undersize wiring. And, in addition, the fuse, held in tight clips, safeguards the entire circuit.

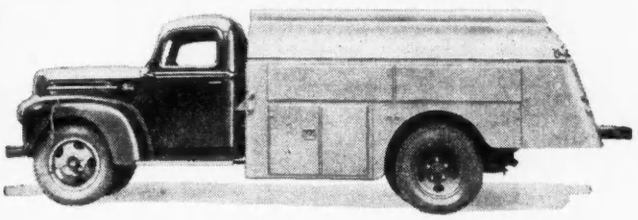
The NIEHOFF Relay is also readily adaptable to any accessory circuit to prevent voltage drop and burning out of contact points.

Your Niehoff Jobber can supply you.

C. E. NIEHOFF & CO. 4925 LAWRENCE AVE. CHICAGO, ILL.
BRANCH: 1342 S. Flower St., Los Angeles, Cal.

IMMEDIATE DELIVERY

1000 GALLON CAPACITY
2, 4 OR 5 COMPARTMENTS



1000 GALLON					
2 Comp.	600	400	capacity		
4 Comp.	350	300	200	150	
5 Comp.	300	200	200	150	150

Built to the usual high *DAVISBILT* standards of *QUALITY*, these "ready-to-deliver" units incorporate all of the road-proven advantages of Davisbilt Engineering and Construction.

READY FOR OPERATION

THE DAVISBILT PRODUCTS COMPANY
AFFILIATED WITH LIBERTY PRODUCTS CORP.
CINCINNATI, OHIO

Fastest — Safest
AUTOMOTIVE PARTS CLEANER

KELITE FORMULA 555 removes carbon, grease, and grime by *cold immersion* in a way formerly thought impossible.

Automotive and diesel engine parts, fuel pumps, carburetors, filter screens, shock absorbers and brake parts are cleaned fast and thoroughly.

Yet Formula 555 is *safe from fire—safe on all metals—safe for the skin* (contains no phenolic compounds).

Ask your Kelite Service Engineer for a free demonstration. Or write for sample and bulletin to Kelite Products, Inc., Box 2917, Terminal Annex, Los Angeles 54, Calif.

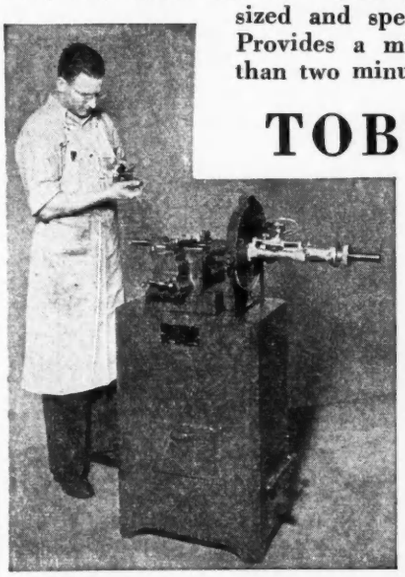
"KELITE" REG. U.S. PAT. OFF.

KELITE
SCIENTIFIC CLEANING THROUGH pH CONTROL

KELITE PRODUCTS, Inc.
INDUSTRIAL CHEMICALS FOR CLEANING & PROCESSING
Manufacturing Plants in
LOS ANGELES • CHICAGO • DALLAS • AUSTRALIA

A Two-Minute Job
Undersize or Odd Size Bearings

This compact unit will handle all shell bearings. Bores individual bearing shells to any predetermined size, also resizes eccentric bearings. Handles undersized and special sized bearings. Provides a mirror finish in less than two minutes.



TOBIN-ARP
Shell Bearing Boring Machine

Full details sent upon request.

TOBIN-ARP MFG. CO.
2845 Harriet Ave. S. Minneapolis 8, Minn.

Oldforge "Quality" Tools

THOUSANDS of discriminating users, in many of the world's largest industrial plants, say that in design, temper, finish and general dependability "OLDFORGE" TOOLS are all that the words "Quality Tools" imply.

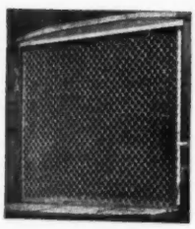
If the mechanics in your Service Department are not now using "Oldforge" Tools, they, too, can have the benefit of our more than twenty years' experience in tool design and manufacture. New tools are constantly being designed to meet present-day service problems—and their cost is modest.

Ask your supplier, or write us direct.

QUALITY TOOLS CORP., New Wilmington, Pa.
New York Office: 11 Warren St. • Phone WOrth: 3640

The Wedler-Shuford Co.
St. Louis 3, Mo.

ZEHR
COLLAPSIBLE TRUCK BACKS



Safe . . . easy and simple to handle. Zehr Truck Backs are all-welded steel designed for great strength and long continuous service. They are theft-proof, rust-proof and flexible.

Write for details and prices.

ZEHR PRODUCTS COMPANY
2130 East Hazzard Street, Philadelphia 25, Pa.

MICRO-LINOR
The
PRACTICAL
LOW-PRICED LINE OF
WHEEL ALIGNMENT
INSTRUMENTS
•
Micro-Linor Service Corporation
1629 West Fort St., Detroit 16, Mich.

FOR PROMPT COMPLETE SERVICE ON AUTOMOTIVE PARTS...

Your NAPA Jobber is a Good Man to Know!

NATIONAL AUTOMOTIVE PARTS ASSOCIATION
Detroit 1, Michigan

Permalux
FINER DECALCOMANIA
FIRST IN { APPEARANCE / ECONOMY / DURABILITY
Made With DuPont "DULUX"
Write Today for details
THE PERMALUX COMPANY
500 Rathbone Ave. • Aurora, Ill.

CCJ Newscast

(CONTINUED FROM PAGE 260)

Leading a fight against specific highway taxes, John V. Lawrence, of ATA, and Jack G. Scott, of the National Association of Motor Bus Operators, testified before the House Ways and Means Committee on May 23. They concerned themselves chiefly with the three per cent tax on freight shipments and the 15 per cent excise tax on passenger transportation.

FUEL CONSUMPTION UP 1/3

Fuel consumed by motor vehicle in the United States during 1946 totaled 25.8 billion gallons, an increase of nearly 33 per cent over the 19.3 billion consumed the previous year. California led all other states with a consumption of 2.4 billion gal., New York was next with 1.8, Pennsylvania third, with 1.6 billion gal.

"How to Drive & Stay Alive" is the theme of a new advertising program to be sponsored by Yankee Metal Products Corp., Norwalk, Conn.

MOHAWK TIRES
and Recapping Materials are both GOOD
The
Mohawk Rubber Co., Akron 5, Ohio

It's rumored that...

more than 1,450 fleets are now using Perfect Circle's Fleet Survey Plan! Right, and with its help they've been able to cut operating and maintenance costs. For information on how the Fleet Survey Plan can help *you*, see your P. C. representative or write: The Perfect Circle Companies, Hagerstown, Ind., U. S. A. and Toronto, Ont., Canada.

WANT COMPLETE SERVICE DATA AT A GLANCE? USE FLEET FORMS

With Fleet Forms it's easy to keep **complete** service and cost records for every vehicle in your fleet. So simplified any attendant can keep these records. So complete you can see the whole story at a glance. Schedules inspections and periodic maintenance, plus dozens of other types data . . . on **one** record.

Write today for free samples and prices

FLEET FORMS CO.
1410 N. HIGH ST. COLUMBUS 1, OHIO

When you call for DURO CHROME you're sure of getting

Doggone Good Tools!

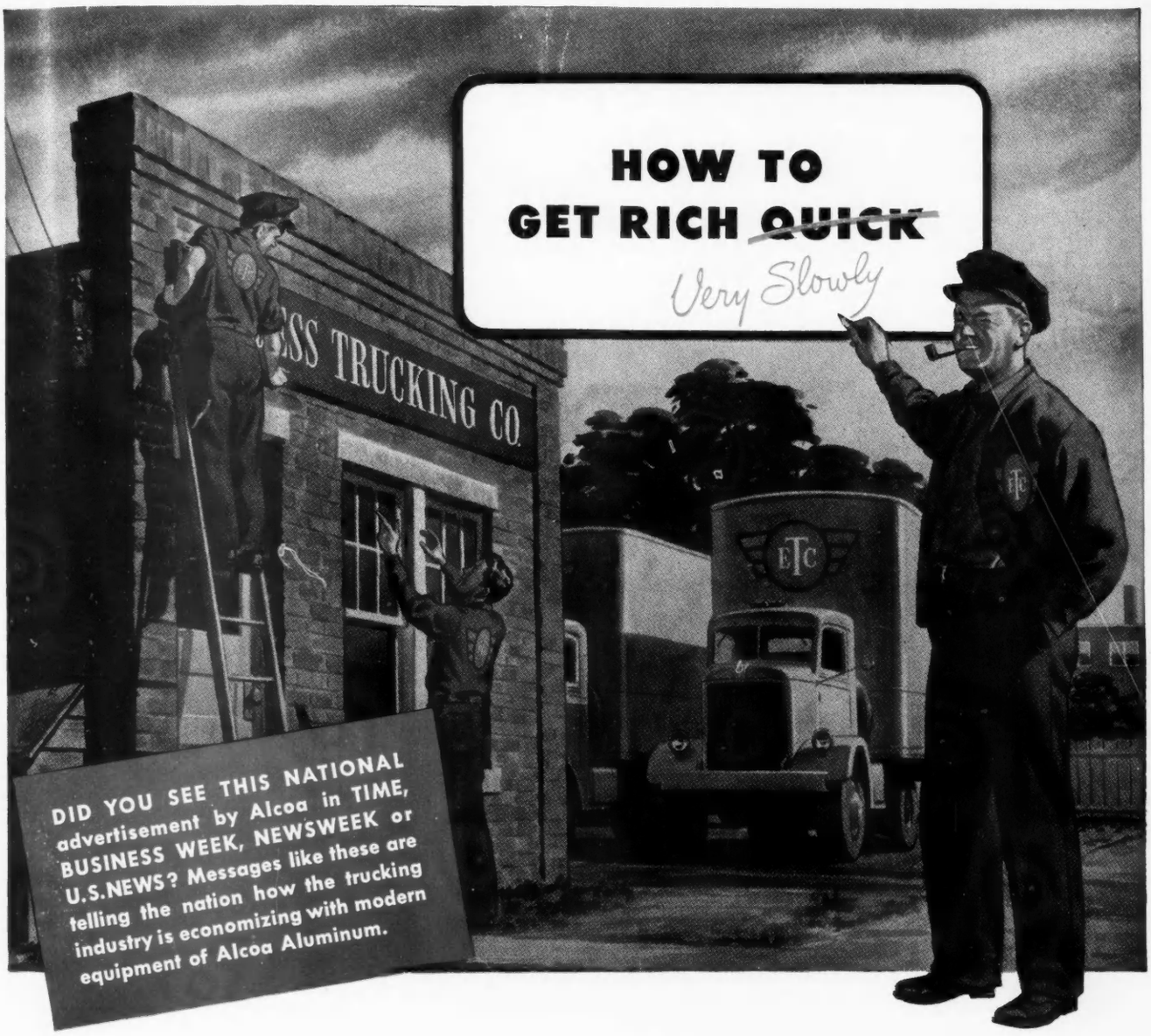
DURO METAL PRODUCTS CO.
2649 N. Kildare Ave., Chicago 39, Ill.
Also Makers of DURO Machine Tools

HEIN-WERNER HYDRAULIC JACKS

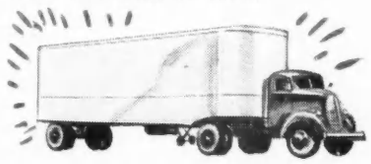
Made in models of 1½, 3, 5, 8, 12, 20, 30, 50 and 100 tons capacity as well as service jacks for shop use and Bumper-Lifts for passenger cars. See your H-W jobber for details.

HEIN-WERNER CORPORATION
WAUKESHA, WISCONSIN

VENTALARM
T.M. REG. U. S. PAT. OFF.
Whistling Tank
Fill Signal
SCULLY SIGNAL COMPANY
88 FIRST ST. CAMBRIDGE 41, MASS.


HOW TO
GET RICH ~~QUICK~~
Very Slowly
SS TRUCKING CO.
ETC
DID YOU SEE THIS NATIONAL advertisement by Alcoa in TIME, BUSINESS WEEK, NEWSWEEK or U.S.NEWS? Messages like these are telling the nation how the trucking industry is economizing with modern equipment of Alcoa Aluminum.

The veteran trucker knows that this is not a "get rich quick" business. It's a business where you have a never-ending battle with costs—equipment costs, fuel costs, tire costs, maintenance costs, and tax fees—and some months, costs crowd your income so closely you wonder if it's worth it. There seems to be nowhere to turn.



Then, along comes something like Alcoa Aluminum. Suddenly, you find you're hauling *more* payload with *less* truck weight, thanks to your new aluminum truck-trailers. You find them not only light and strong, but nonrusting, too. Income starts to creep up . . . operating and maintenance costs to creep down. It's a grand feeling!

And every truck line whose "highway freighters" you see, carrying your food from the country, your goods from city to city, is a living monument to a group of men with grit enough to fight the battle of costs—and win it!

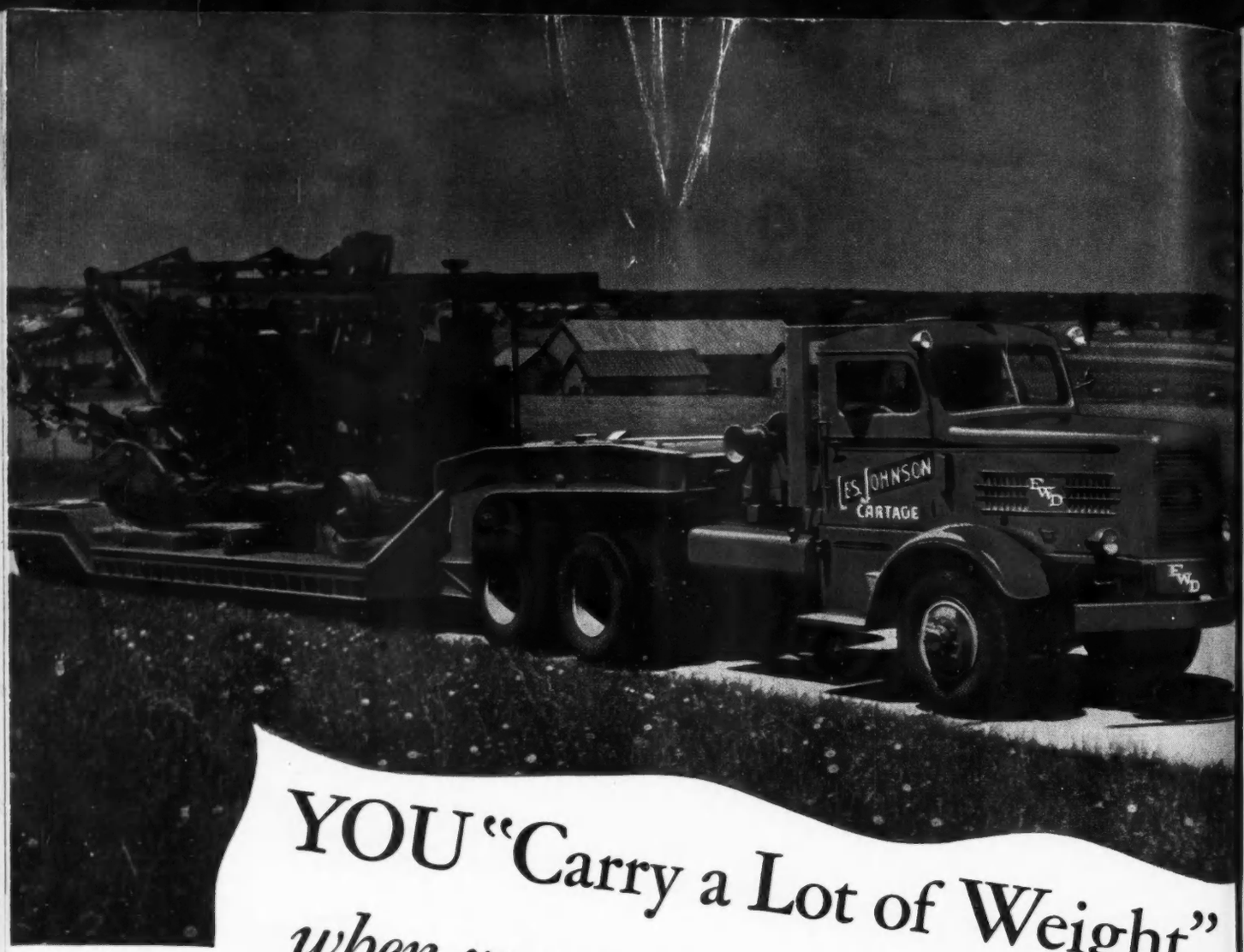
It makes us at Alcoa feel good, too—to know that the light, strong, nonrusting metal we produce has helped many a courageous, hard-working truck line to widen the gap between costs and income. We're working constantly with automotive engineers and truck builders to keep on widening that gap. More and more bodies and wheels and axles, pistons and cylinder heads and housings of Alcoa Aluminum are going into truck service every day. ALUMINUM COMPANY OF AMERICA, 2139 Gulf Building, Pittsburgh 19, Pa.

ALCOA

ALCOA

FIRST IN

ALUMINUM



YOU "Carry a Lot of Weight" *when you operate with* **FWDs**

HAULING heavy machinery, huge loads of cement, bulky loads weighing 50 tons or more—those heavy-duty hauling jobs are usually entrusted to FWD four-wheel-drive trucks.

The safety and surety — the reliable pulling power of four or six driving wheels — the ability to move the load to location on or off the highway — these FWD advantages count heavily in this and other heavy-duty trucking operations.

Wherever motor truck performance must be more than usually dependable — in heavy hauling, in highway or municipal service, in utility line-construction and maintenance, in oil-field operations — FWD four-wheel-drive and six-wheel-drive trucks are rendering important service.

See the nearest FWD Distributor or write for literature.

America's Foremost **FWD** *Heavy-Duty Truck*

THE FOUR WHEEL DRIVE AUTO COMPANY · CLINTONVILLE, WISCONSIN

Canadian Factory: Kitchener, Ontario